System Control CSCI

Operations Configuration Manager (OPS CM) CSC

Revised
Thor Requirements

Design Panel 3 Review

84K00570-010 Rev A

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1. Operations Configuration Manager CSC

1.1 Operations Configuration Manager (OPS CM) CSC Introduction

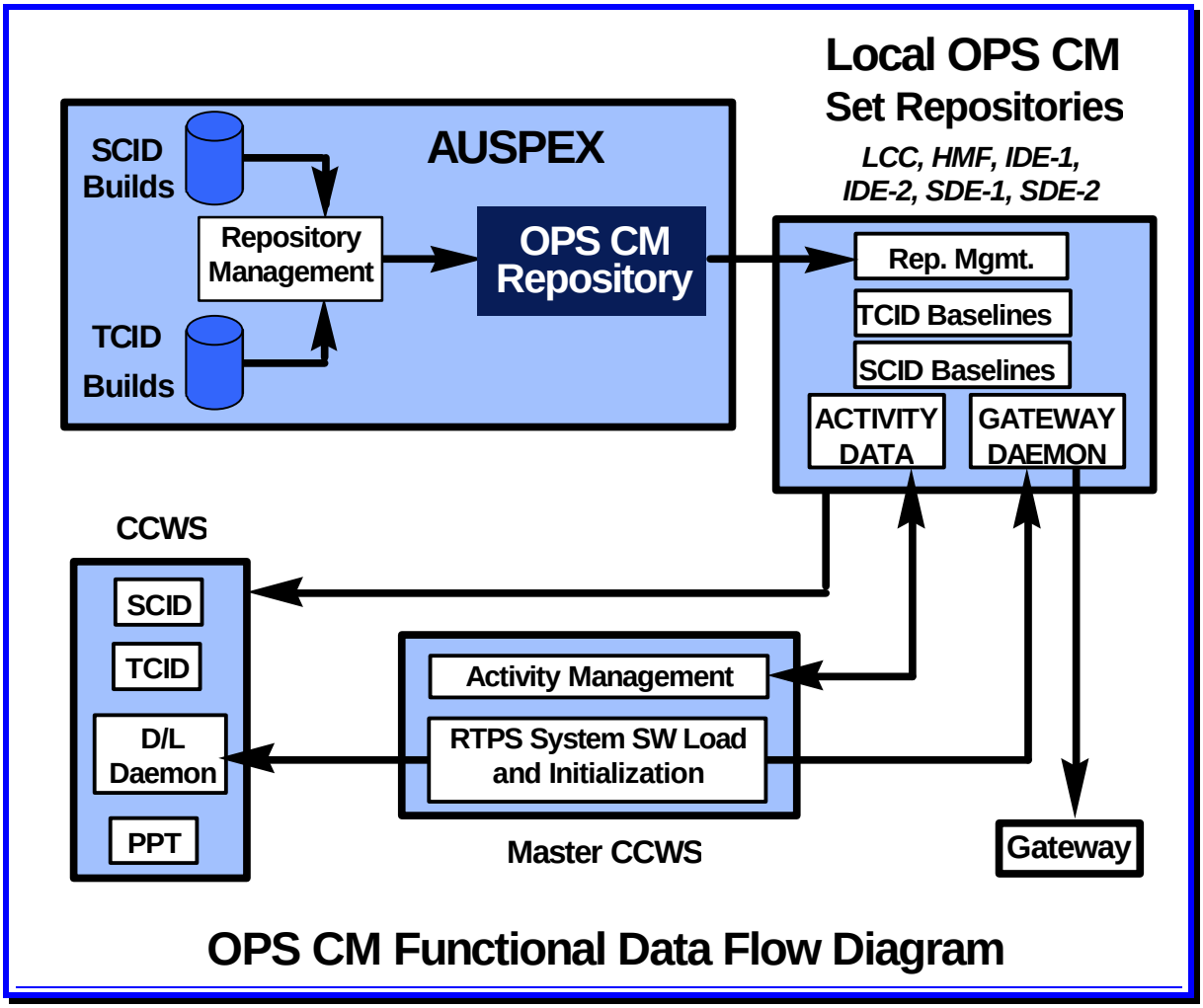
1.1.1 OPS CM Overview

The Operations Configuration Manager (OPS CM) CSC provides the capability to configure DDPs, CCPs, Gateways, and ~~HCI~~CCWSs in order to support CLCS operations. This configuration includes downloading SCID and TCID software baselines and initializing this software. OPS CM also supports the creation and management of activities within the CLCS.

OPS CM can be viewed as having the following functional data flow. A Repository Manager checks SCID and TCID Builds into the OPS CM Repository on the Auspex server and distributed to local cm servers. These Builds are distributed to the OPS CM Set Repositories in the SDE and IDE environments. A Master Function ~~HCI~~CCWS handles the download and activity management, and platform initialization for the DDPs, CCPs, Gateways and other ~~HCI~~CCWSs. A detailed data flow diagram is shown in section 1.2.5.

1.1.2 OPS CM Operational Description

OPS CM provides a set of integrated tools assisting in the end-to-end movement of system software, test applications and test products. OPS CM provides tools to bring in new baselines and transport them to the various RTPS Platforms. Baselines for system software and test software are associated to a set of target platforms using the activity manager and Master Control Panel functions of OPS CM. Once these activities are defined, the OPS CM download function distributes these baselines, as defined by the activity definitions, to the target platforms and initializes the software. OPS CM will maintain a table of platform configuration information (called a platform parameter table - PPT) that can be accessed by test software through a set of APIs. OPS CM software also allows users to monitor the configurations of other platforms in the CLCS. At the command of the Master Controller, OPS CM processes will do a preliminary clean up of files on the local platform and close out the processes started up at initialization.



1.2 OPS CM Specifications

1.2.1 OPS CM Ground Rules

OPS CM will operate under the following ground rules and assumptions:

a The central CM repository will be located on an Auspex platform.

b DDP, CCP and CCWS platforms will be SGI computers.

c SCIDs referred to in this document do not include COTS or operating system (OS) software.
- COTS will be the responsibility of the OS group.

d NFS mounts will be available for use by OPS CM for activity management, server synchronization, and software download to the local platforms. An isolated CCWS attached to the Auspex and all known cm-servers will be available to run the server sync tool.

e Gateways will be loaded with unique TCID Gateway tables according to their specified function.

f A temporary read-write area will be provided on each platform. (excluding Gateways)

g For Thor , it will be procedural to ensure that the correct SCID for a specific TCID has been loaded, and that the correct versions of the operating system and COTS software have been associated with a specific SCID.

h The rw_local and rw_temp directories on each target platform will be populated with subdirectories named for each user class.

i OPS CM will support only one user class for Thor.

j OPS CM will assume that there will be minimal need to switch between the Thor and Redstone baselines in a given environment. If switching needs to be done, it will be a manual process

k OPS CM has the following dependencies on other CSCIs:

- GSE Gateway
  - Inputs to the Gateway IDD.
  - Gateway load software for testing.
- System Build
  - SCID directory structure.
- Test Build
  - TCID directory structure.
- Hardware Architecture
  - Server Sync workstation (a login O2 attached to the FDDI ring with nfs mounts to the Auspex and all cm-servers.
- System Services
  - Application Messaging API definition remains supported and unchanged
  - Conversion from ATM to fast Ethernet will have no impact on current SCT processes.
  - Application Messaging software for testing.
  - System Messaging API definition.
  - System Messaging software for testing.
  - Network Registration Service (NRS) API definition.
  - Network Registration Service software for testing.
  - Initialization and Termination Service API definition.
  - Initialization and Termination Service software for testing.
  - Local Logging Services API definition.
  - Local Logging Services software for testing.
- OS
  - . OPS CM requires the existence of a non-login desktop environment at boot time
- User Applications
  - Complete descriptions of which user applications need to be started at initialization, including executable name and location, environment variables, set-up scripts, additional parameters, dependencies on other processes, etc. will be provided prior to scheduled UIT.

1.2.2 OPS CM Functional Requirements

The Functional Requirements area is composed of the following sections:

1 File Repository Management - Copies files in the Auspex CM Repository Build Output area into the OPS CM Repository test repositories, promotes test to verified, and performs baseline deletion. A Server synchronization tool is included in this function.

2 Activity Management - Add/modify/delete activity definitions

3 Software Download - Download SCID/TCID baselines to RTPS Platforms

4 Platform Configuration and Initialization - Initializes the system software and positional software on the RTPS Platform

5 Platform Parameter Table - APIs to store and retrieve individual platform configuration data.

6 Logging - General logging requirements

Note:

The term "RTPS Platform" includes CCWS, DDP, CCP, and Gateways unless otherwise stated.

1.2.3 File Repository Management

1 OPS CM will provide the following file repositories:
- a. Verified Application Repository (VAR)
- b. Unverified Application Repository (UAR)
- c. Test Build Products Repository (TBPR)
- d. System Build Repository (SBR)
- e. Front End Gateway Repository (FEGR)
- f. User Managed Storage (UMS)

NOTE: for requirements 1.2 - 1.11, TCID refers to the user apps portion only.

2 OPS CM will provide the capability for authorized users to introduce changes within a single subsystem into an OPS CM SCID test repository.

3 OPS CM will provide the capability for authorized users to introduce an SCID baseline into a test repository.

4 OPS CM will provide the capability for authorized users to introduce a TCID data baseline into the OPS CM TCID repository.

5 OPS CM will provide the capability for authorized users to introduce a TCID software baseline into a test repository.

6 OPS CM will provide the capability for authorized users to promote an SCID baseline.

7 OPS CM will provide the capability for authorized users to promote a TCID baseline.

8 OPS CM will prevent the user from introducing an SCID baseline into an existing baseline

9 OPS CM will prevent the user from introducing a TCID baseline into an existing baseline.

10 OPS CM will prevent an unauthorized user from promoting an SCID baseline.

11 OPS CM will prevent an unauthorized user from promoting a TCID baseline.

12 OPS CM will provide the capability for authorized users to delete an SCID baseline from an OPS CM repository.

13 OPS CM will provide the capability for authorized users to delete a TCID baseline from an OPS CM repository.

14 OPS CM will provide a mechanism to copy an SCID baseline onto a single cm-server.

15 OPS CM will provide a mechanism to copy a TCID software baseline onto a single cm-server.

16 OPS CM will provide a mechanism to copy a TCID data baseline onto a single cm-server.

17 OPS CM will provide a mechanism to copy an SCID baseline onto multiple cm-servers in a single operation.

18 OPS CM will provide a mechanism to copy a TCID software baseline onto multiple cm-servers in a single operation.

19 OPS CM will provide a mechanism to copy a TCID data baseline onto multiple cm-servers in a single operation.

20 OPS CM will provide a GUI for users to perform synchronization between the OPS CM Repository and local cm-servers.

21 OPS CM will provide the capability to delete a baseline on a local cm-server.

22 *OPS CM will provide the capability to delete a baseline on all local cm-servers.*

1.2.4 Activity Management

1 OPS CM will provide a method to manage activities in the CLCS.
2 OPS CM will provide a graphical CCWS interface for Activity Management.
3 OPS CM will provide a method for the addition of a new Activity.
4 OPS CM will provide a method for the modification of an Activity.
5 OPS CM will provide a method for the deletion of an Activity
6 OPS CM will provide a method to confirm the deletion of an Activity.
7 OPS CM will provide a method to designate an Activity as active.
8 OPS CM will provide a method to designate an Activity as inactive.
9 OPS CM will only allow the deactivation of an Activity in use upon user override.
10 OPS CM will provide a method to specify that an Activity requires verified software only.
11 OPS CM will provide a method to associate an Activity Type to an activity.
12 OPS CM will provide a method to display the activities that RTPS Platforms are supporting.
13 OPS CM will provide a method to define SCID and TCID baselines for each RTPS platform type within an activity.

~~a NOTE: The following requirements are deferred to a later release pending the definition of user classes & allocation to CCWS's~~

14 The available Activity Types will be:
   a. Operations (OPS)
   b. Simulation (SIM)
   c. Development (DEV)

1.2.5 Software Download

1 OPS CM will provide the capability to load a single RTPS Platform with an SCID baseline.
2 OPS CM will provide the capability to load a single RTPS Platform with a TCID baseline.
3 OPS CM will provide the capability to load a single RTPS Platform with an SCID baseline and a TCID baseline in a single operation.
4 OPS CM will provide a graphical CCWS interface to allow authorized users to request and execute download functions.
5 OPS CM will provide the capability to load RTPS Platform groups with an SCID baseline in a single operation.
6 OPS CM will provide the capability to load RTPS Platform groups with a TCID baseline in a single operation.
7 OPS CM will provide the capability to load RTPS Platform groups with an SCID baseline and a TCID baseline in a single operation.
8 OPS CM will check for the existence of a specified SCID on the target platform prior to download.
9 OPS CM will check for the existence of a specified TCID on the target platform prior to download.

10 OPS CM, by default, will not perform the download to the target platform if the specified baseline already exists on the target platform.

11 OPSCM will provide a method for the user to force downloads of existing baselines on the target platform.

12 OPS CM will set default ownerships and permissions for files downloaded to RTPS Platforms (as supported by the OS platform).

13 OPS CM will set special ownerships and permissions for files downloaded to RTPS Platforms that are specified in a predefined list (as supported by the OS platform).

14 When a baseline is being overwritten, OPS CM will ensure that any existing baseline files on the target platform are removed or completely replaced before the new baseline is loaded.

15 OPS CM will provide a method to display the current software baseline loads per platform.

16 OPS CM will verify the downloaded software baseline on the RTPS Platform.

17 *(Deferred to Later Release)*OPS CM will set the default selected load to verified software for Activity Types of "OPS".

18 OPS CM will provide the capability to load the RTPS Platform with unverified software for Activity Types of "OPS".

1.2.6 Platform Configuration and Initialization

The RTPS Platform and Initialization section is composed of the following subsections:

1. Common
2. CCWS Platforms
3. DDP and CCP Platforms
4. Gateway Platforms

1 Common

a. OPS CM will provide the capability to initialize system software baselines on RTPS Platforms.

b. The software initialization of an RTPS Platform will be based on the allocated activity.

c. OPS CM will provide a graphical CCWS interface for authorized users to initialize downloaded RTPS Platforms.

d. OPS CM will provide the capability to invoke a system startup script to initiate the SCID processes on the RTPS Platform. (excluding Gateways)

e. OPS CM will provide a method to specify other applications to be started after the system startup script has completed (excluding Gateways).

f. Upon platform termination, OPS CM will terminate all SCID processes started at configuration time (excluding Gateways).

g. Upon platform termination, OPS CM will terminate all TCID processes started at configuration time (excluding Gateways).

h. Upon platform termination, OPS CM will delete files stored in the platform's local temporary storage.

i. Platform termination will be performed prior to platform download and prior to platform initialization. (excluding Gateways).

2 CCWS Platforms

a. OPS CM will use standard operating system resource files to assist in the initialization of the CCWS platform.

b. OPS CM will provide the user with a method to append selected modifications to the standard operating system resource files based on user class

c. OPS CM will provide the capability to initialize a single CCWS platform.

d. OPS CM will provide the capability to initialize multiple CCWS platforms to the same activity in a single operation.

3 DDP and CCP Platforms

a. OPS CM will initialize platform applications based on platform type.
b. OPS CM will provide a method to report the current status of each CCP and DDP platform.
c. OPS CM will provide a graphical CCWS interface for authorized users to configure and de-configure a given set of CCP and DDP platforms.

4 Gateway Platforms

a. OPS CM will report the current mode, TCID and SCID baselines of the selected Gateway.
b. OPS CM will provide a graphical CCWS interface to issue commands to initialize, start, and terminate Gateway processes.
c. OPS CM will provide a graphical CCWS interface to request and display Gateway status information.

1.2.7 Platform Parameter Table (PPT)

1 OPS CM will manage the following minimum data set on the local platform (excluding Gateways):

a. Platform Name: Uniquely identifies a specific instance of the platform entity.
b. User Name: The ASCII identifier of the user currently logged onto the platform.
c. Position Name: The ASCII Position ID of the user currently logged onto the platform.
d. Activity: The currently configured Activity name.
e. SCID: The current SCID baseline ID loaded on the CCWS platform.
f. SCID: The current SCID baseline ID loaded on the ccp platform.
g. SCID: The current SCID baseline ID loaded on the ddp platform.
h. TCID: The current TCID baseline ID loaded on the CCWS platform.
i. TCID: The current TCID baseline ID loaded on the ccp platform.
j. TCID: The current TCID baseline ID loaded on the ddp platform.
k. Tail ID: The vehicle ID.
l. Flight Number: The shuttle flight number.
m. Responsible System (RSYS): The RSYS associated with the Group/Position ID of the user currently logged onto the platform.
n. End Item Location: The location of the end item under test (OPF1, VAB1, PAD A, etc.).
o. Gateway list used by the current activity definition including Gateway name, type, SCID, and TCID.
p. Number of Gateways defined in the current activity.

2

3 OPS CM will provide an API to allow applications to read a single entry in the Platform Parameter Table.

4 OPS CM will provide an API to set the user name and positional ID in the Platform Parameter Table.

5 OPS CM will provide an API to retrieve the set of Gateway records stored in the Platform Parameter Table.

6 OPS CM will provide an API to retrieve a single Gateway record, based on record number, stored in the Platform Parameter Table.

7 OPS CM will provide the following PPT data on downloaded gateway platforms:

a. Activity: The currently configured Activity name.

b. SCID: The current SCID baseline ID loaded on the platform.

c. TCID: The current TCID baseline ID loaded on the platform.

d. Tail ID: The vehicle ID.

e. Flight Number: The shuttle flight number.

f. End Item Location: The location of the end item under test (OPF1, VAB1, PAD-A, etc.).

g. Test Location: Post Thor

h. Activity Number: Post Thor

i.

1.2.8 Logging

1 OPS CM will log requests for OPS CM functions.

2 OPS CM will log the results of user specified requests for its functions.

3 OPS CM logging will be in Human understandable ASCII format.

4 OPS CM will log the RTPS Platform Parameter Table.

5 OPS CM will log error events.

6 OPS CM will provide a system message when a platform initialization completes successfully.

7 OPS CM will provide a system message when a platform initialization completes unsuccessfully (Provided the System Message process is running on the platform)

8 OPS CM will log Health and Status of OPS CM functions including:

a. Initiation of an OPS CM function.

b. Initiation of selected stages of an OPS CM function.

c. Successful completion of an OPS CM function.

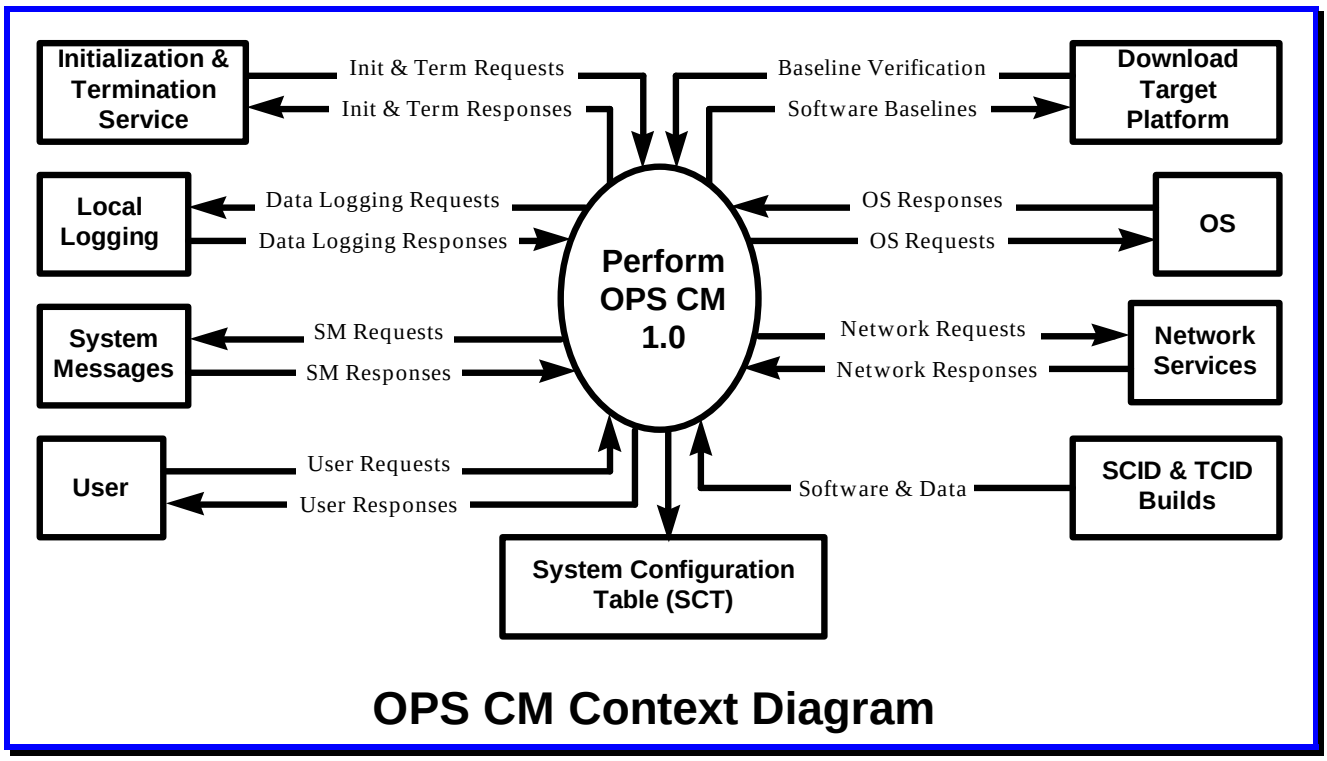
d. Unsuccessful completion of an OPS CM function.

1.2.9 OPS CM Performance Requirements

TBD

1.2.10 OPS CM Interfaces

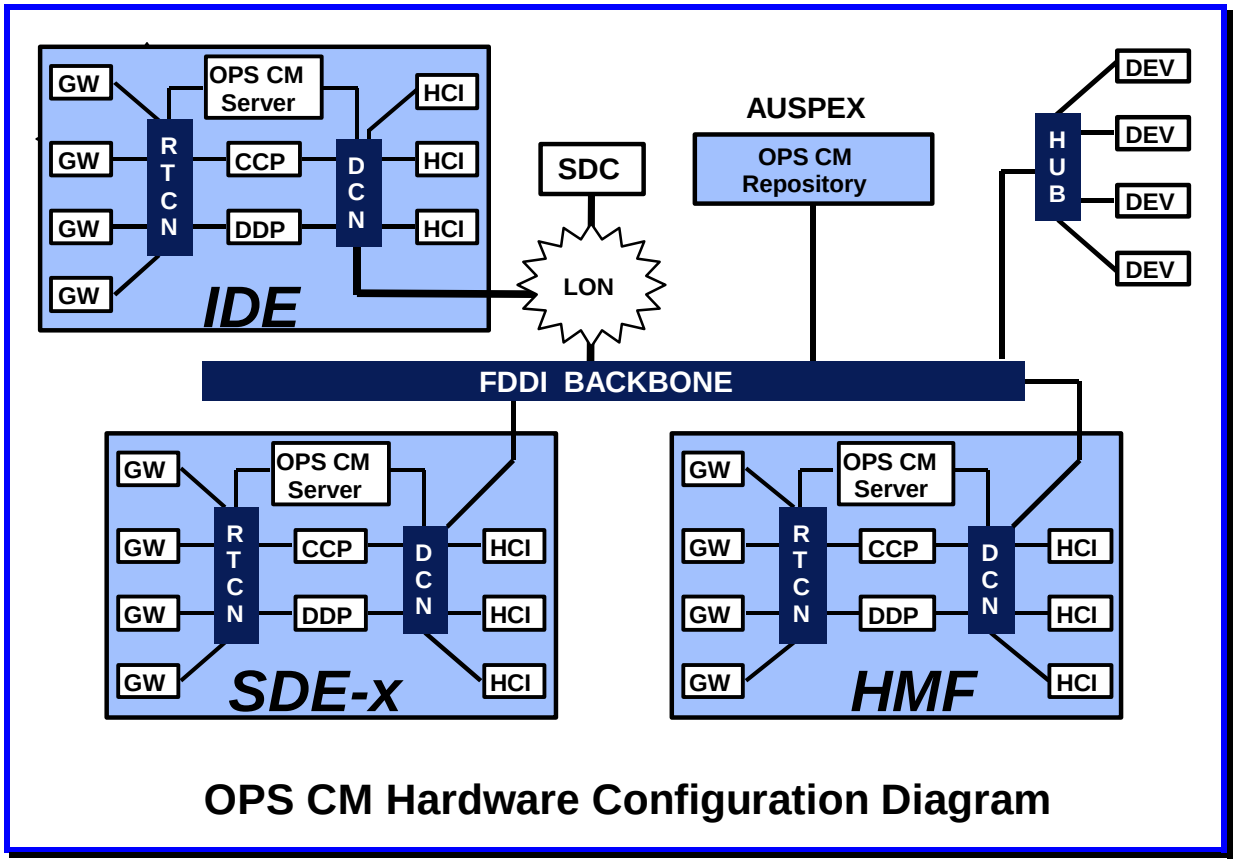
OPS CM interfaces with the CLCS user, system and test software baselines, target platforms and System Services software. These interfaces are shown in the following context diagram.



1.2.11 OPS CM Data Flow Diagram

The SCID and TCID Builds are retrieved~~distributed~~ from the OPS CM Repository on the Auspex to the OPS CM Servers in each of the development environments. These OPS CM Servers distribute the appropriate software to the RTPS Platforms in their respective ~~development~~ environments. A top level OPS CM Data Flow Diagram is shown on page 11.

1.2.12 OPS CM Hardware Diagram



1.3 OPS CM Design Specification

OPS CM functions will generally ~~to be~~ run in a pre-operations time frame; however, it is designed to run in either the operations or pre-operations time frame. OPS CM's main purpose is to establish and initialize a configuration of hardware and software used to support a given mission or test. OPS CM Software runs on the Auspex Server, Local CM Servers, CCP's and DDP's, and on ~~HCI~~CCWS workstations. Daemon processes are initialized at boot time on all ~~HCI~~CCWS, CCP, DDP, and Local CM Server platforms. These daemons will coordinate with the Master Control Panel GUI running on the ~~HCI~~Master Control workstation to control download & initialization of SCID and TCID Baselines

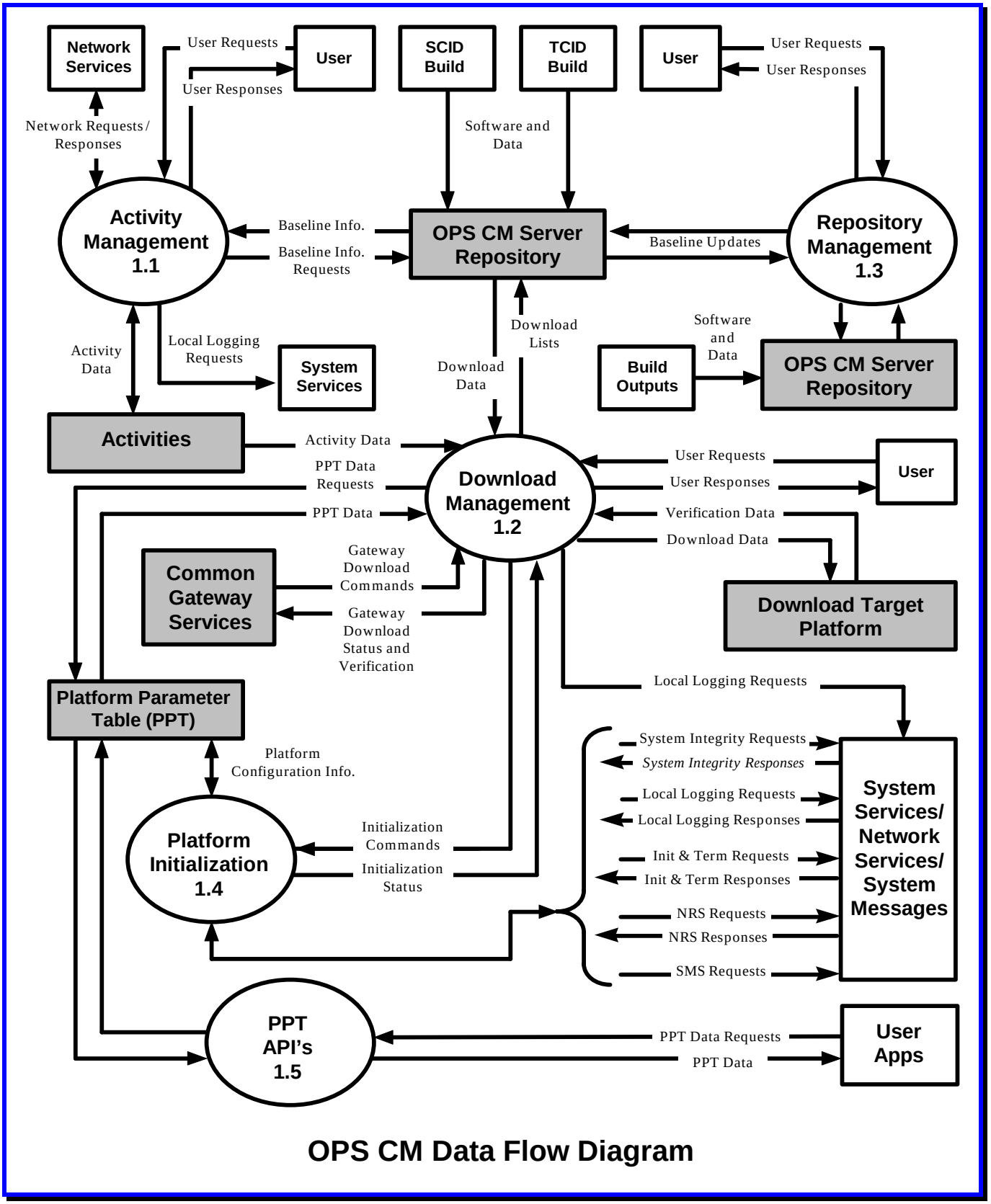
1.3.1 OPS CM Detailed Data Flow

This data flow provides a pictorial representation of the flow of data between external sources and destinations and the major and minor functions of OPS CM.

OPS CM provides the tools necessary to control system baseline and test baseline inclusion into the CLCS operational environment (Repository Management). The Repository Management function relies on SCID and TCID build processes to provide baselines to the CM repository. The CM user will have the capability to manage the various baselines for use in the CLCS environment.

Tools are provided to define the operational environment in which the user community will perform their work~~responsibilities~~ in support of the Shuttle test flow (Activity Management). This capability allows the Master Controllers ~~responsible user~~ to define the software and data that will be used to support the test.

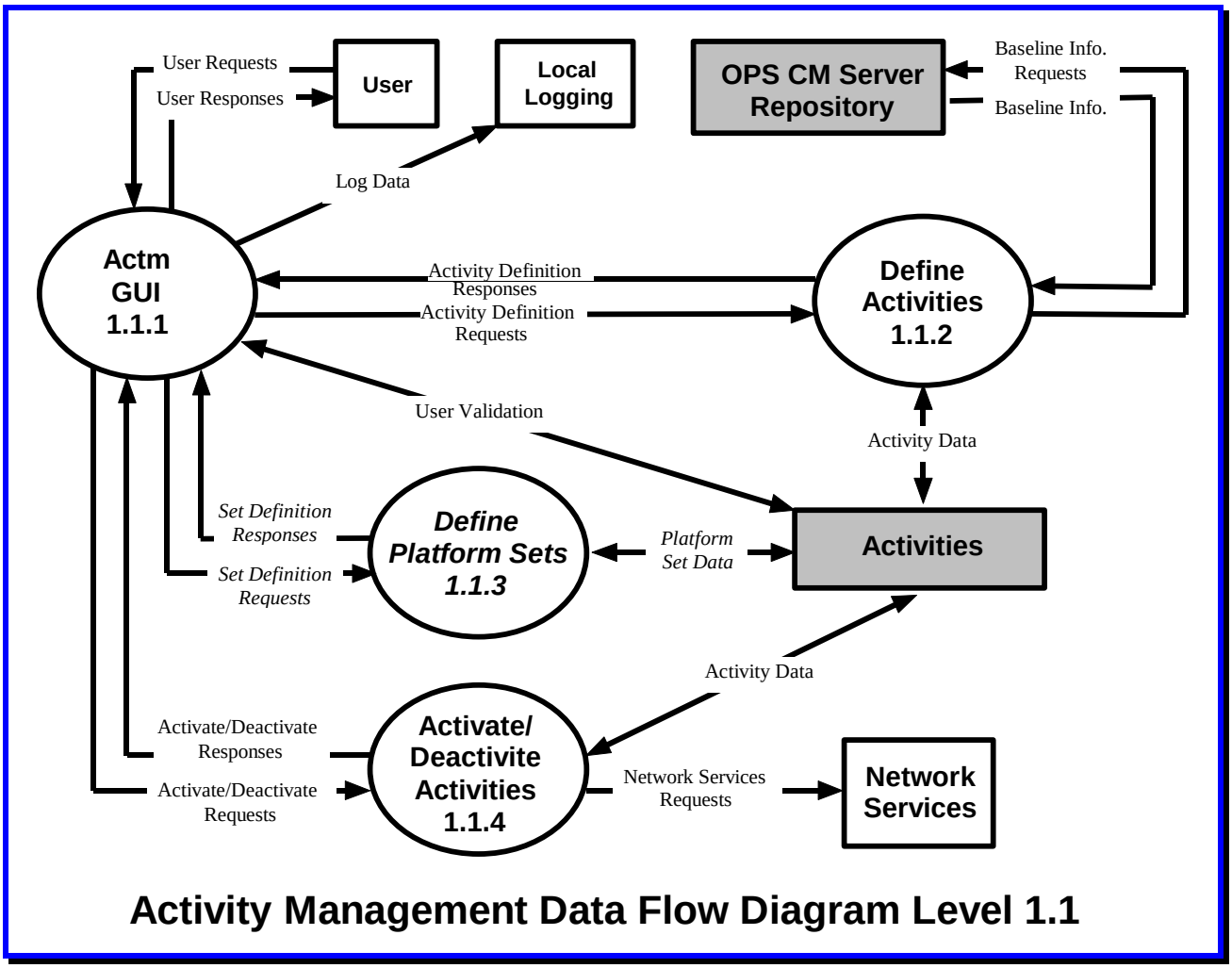
Other tools are provided to populate the appropriate platforms with software and data that are to be used for the test (Download Management), and also to initialize these platforms to a ready state for support (Platform Initialization) The user responsible for downloading and initializing the various platforms will download the appropriate software and data from the local CM server repository based upon the baselines defined in the Activity, and will be advised of download status and completion.
OPS CM provides a table of information about the current configuration of each platform (Platform Parameter Table), as well as API's to access this information.



OPS CM Data Flow Diagram

Activity Management Data Flow

The responsible user will use the Activity Management GUI to define, activate and deactivate Activities. During the definition, available baseline(s) information is selected from the OPS CM Server Repository and inputs are logged. The Activity Management GUI will be used to define the set of platforms, the SCID, and TCID, and other activity parameters to be associated with an activity. The combination of the platform set and associated baseline information will be stored in the activity. The GUI is also used to activate and deactivate defined activities for use. Only active activities will be available for download / initialization~~configuration~~ purposes. OPS CM provides this activity status to the network registration service. Activity Manager establishes read only mounts to the local mc server to allow for the selection of baseline information from actual baseline repositories on that server. A read-write mount is established to the /clcs/act_def/activities directory for activity manager to store and retrieve activity information that is used throughout the domain serviced by that cm-server. There is a separate set of activites for each local cm-server.

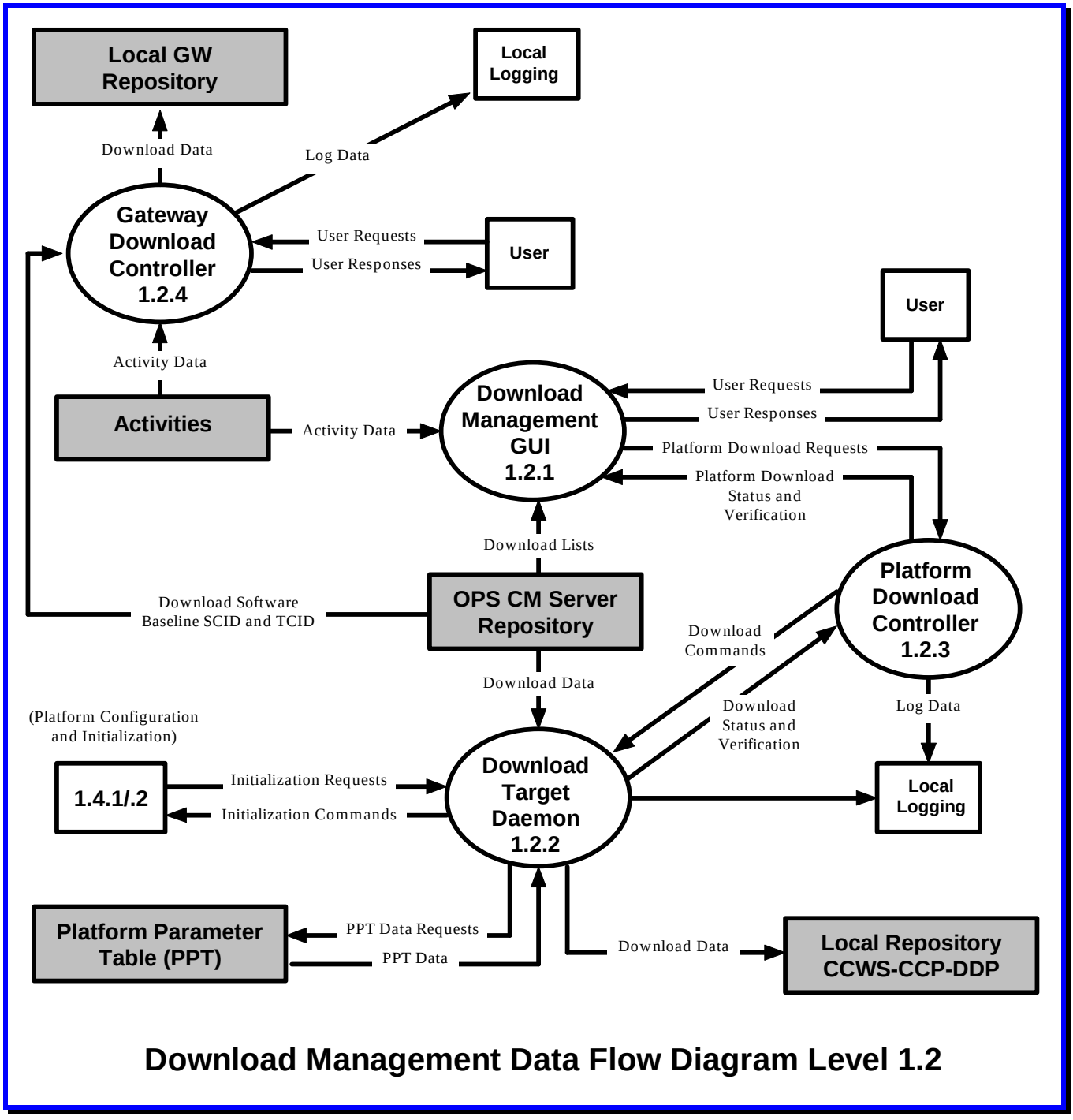


Activity Management Data Flow Diagram Level 1.1

Download Management

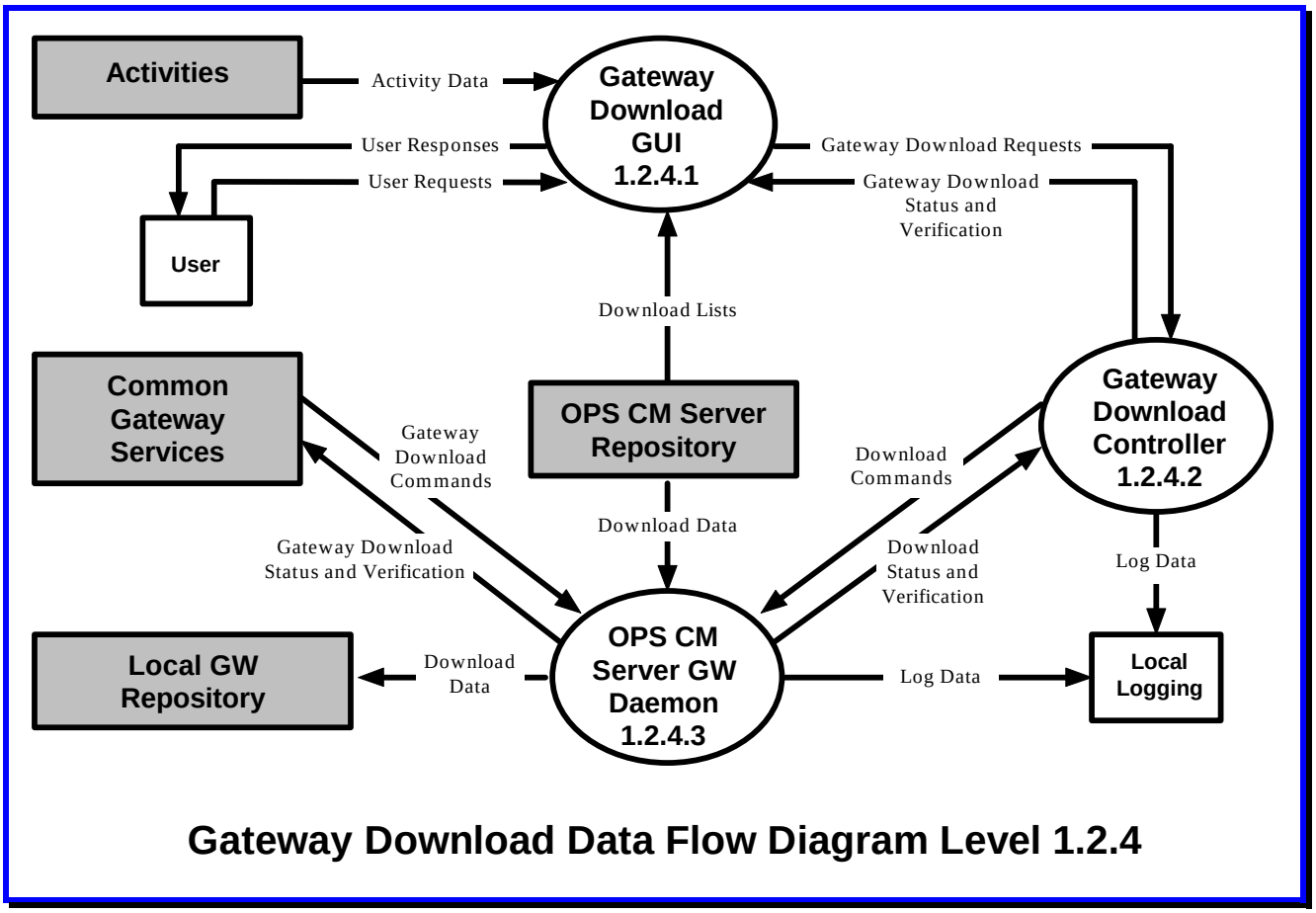
The user responsible for downloading SCIDs and TCIDs to the different platforms will use the Download Management GUI. Download Management will access the Activity data to determine which activities are available for use, and will use it to select the specified SCID and TCID from the OPS CM Server Repository to download to the specified platform(s). The Platform Download Controller will interface with the Download Target Daemon running on the platform and determine what SCID and TCID are on the platform, if any. The user will have the option not to perform the download if the SCIDs and TCIDs are already loaded or the user can download the SCID and TCID to the target platform. All requests and status from the Download Controller are logged. The Download Target Daemon will update the Platform Parameter Table and report status back to the GUI at the completion of the download. This occurs for all ~~HCI~~CCWSs, DDPs, and CCPs.

The download target daemon(s), upon receipt of request from the GUI (via application messaging) will then establish an "rsh" session with the local cm-server (requiring trusted host) and retrieve the designated baselines. The list of target subsystems to be downloaded are selected from the Master Control Panel GUI prior to download. The Master Controller will be presented with a list of available subsystems of a given subsystem type (or "all") along with their current download status. The list of platforms to be downloaded, and the activity to be loaded are selected from this list.



Download Management Data Flow Diagram Level 1.2

The Gateway Download process works in much the same way as the Platform downloads. The Gateway will have an SCID already loaded. If the SCID on the Gateway is not the one to be used per the Activity data, the user will initiate the download of the desired SCID which will be retrieved from the OPS CM Server Repository. If a TCID already exists on the Gateway, the user will have the option to use the one already loaded or reload the Gateway's TCID tables dependent upon the Gateway type. The OPS CM Download Management GUI will communicate with a daemon process (via multicast application messaging) initiated on the local OPS CM Server at server boot time. Refer to the Gateway IDD for details of the OPS CM / Gateway communications & Gateway modes.

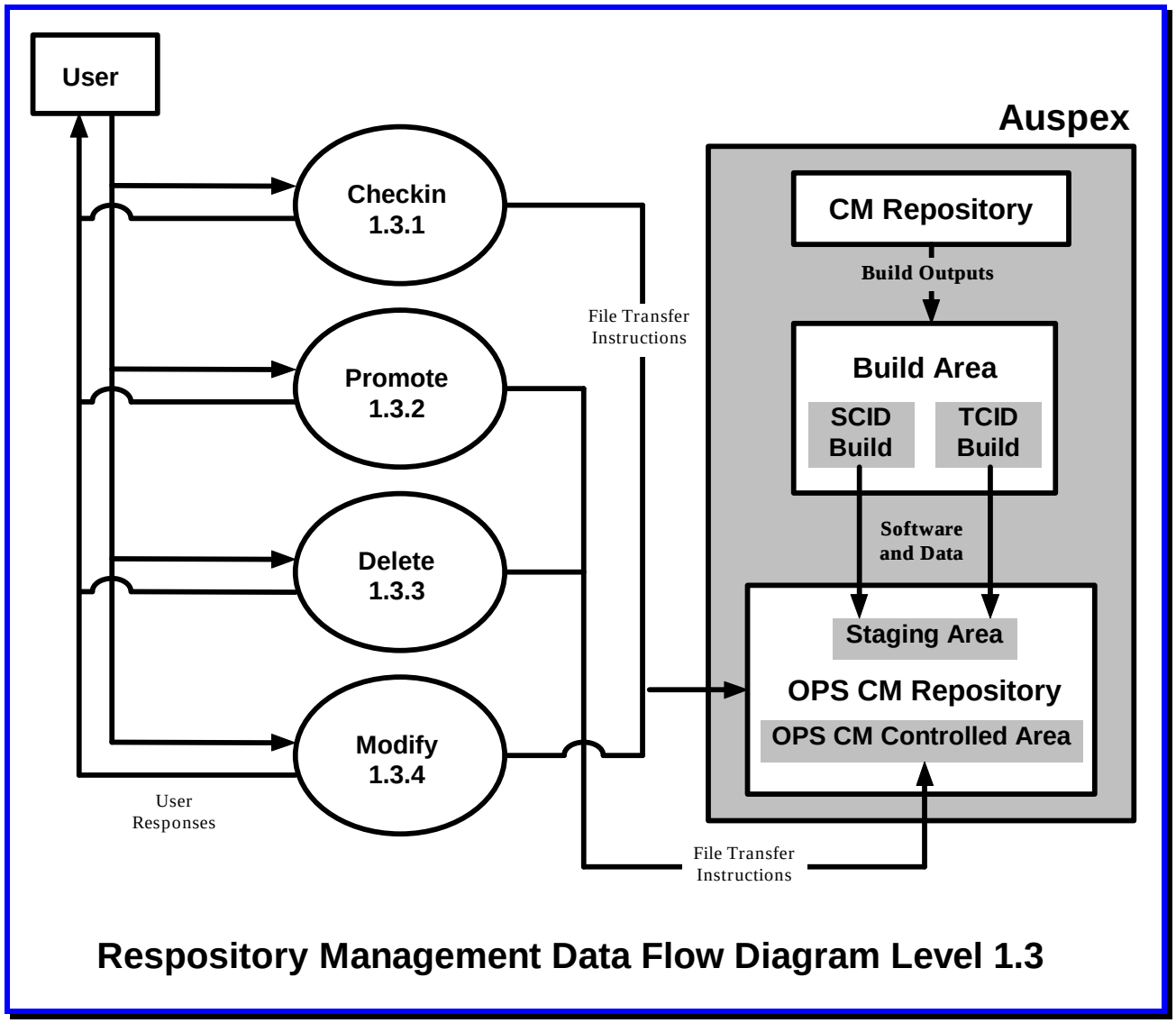


Gateway Download Data Flow Diagram Level 1.2.4

Repository Management Data Flow

The SCID and TCID build output will be stored in the Build Output~~staging~~ area of the CM Repository. The authorized user will have the capability to check in an SCID and a TCID from the ~~staging~~ build output area to ~~an operational~~the OPSCM Repository test area~~area~~ for distribution to the local CM Server(s)~~testing~~. The user will also have the capability to promote these baselines into an operational support area. There is also a delete capability to remove old or unwanted baselines. ~~The capability will be provided to allow the user to modify an existing baseline to include a software fix, in lieu of performing a full build process.~~ Another process will allow for the promotion of software baselines from the test repositories on the OPSCM Repository to the Verified area of the OPSCM Repository. Once promoted, the test baseline is removed from the test repository.

An additional capability is provided to allow users at the local cm-servers to navigate through the OPS CM Repository to retrieve new baselines and place them in storage on the local cm server

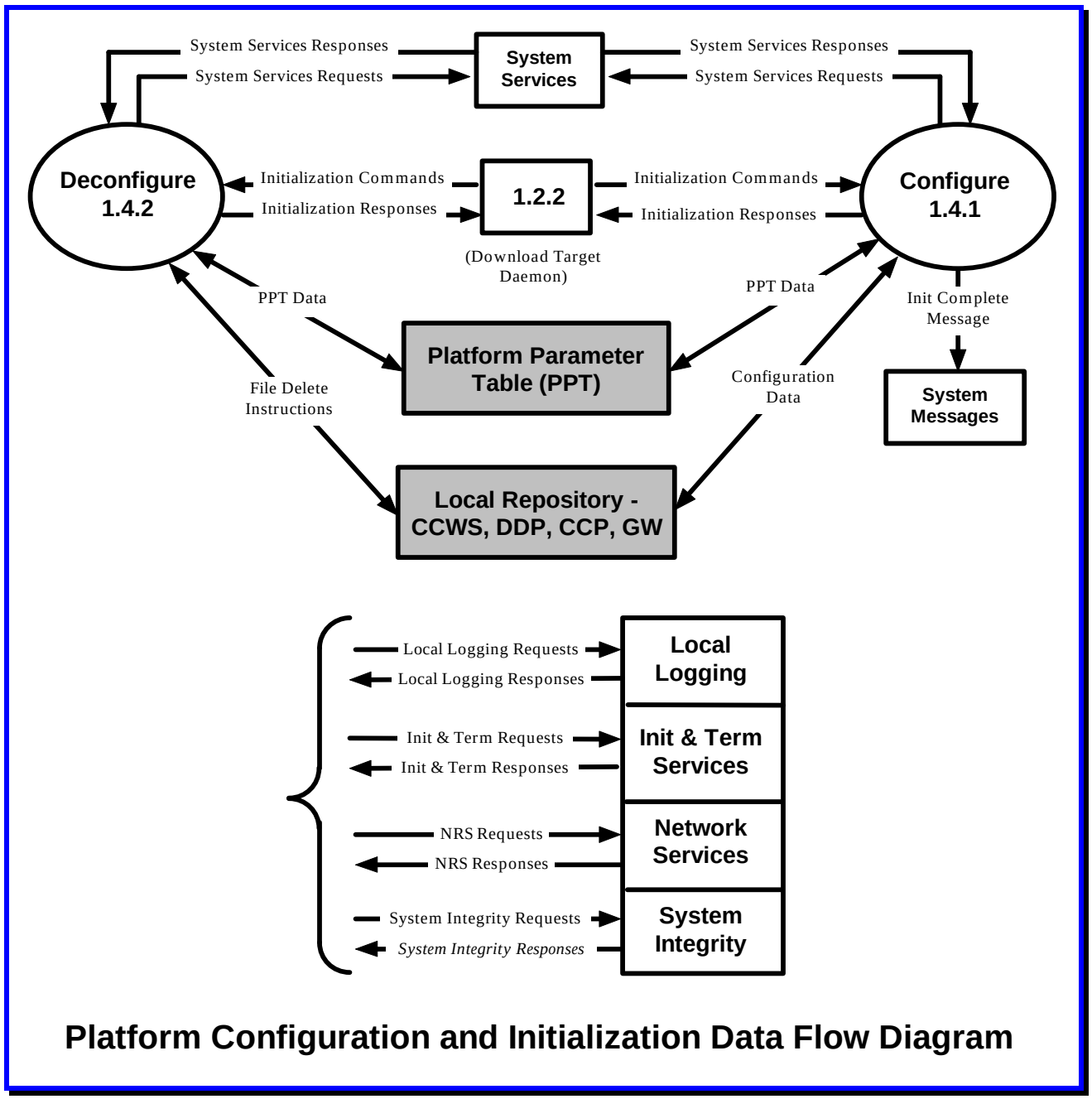


Respository Management Data Flow Diagram Level 1.3

Platform Configuration & Initialization Data Flow

~~The CLCS user~~The Master Controller will use the ~~System Services login capability~~OPSCM Initialize capability to configure the CCWS for standard system services and subsystem specific services. ~~After the user logs in, the workstation will be configured for standard System Services, platform specific services and (on HCI's) any positional required processes that are defined in the user's start-up script.~~ The Platform Parameter Table and System Configuration Table will be updated to reflect the final workstation configuration. System Status messages will indicate successful or unsuccessful initialization.

~~When a user logs out~~At the request of the Master Controller, the workstation will be deconfigured by OPS CM and all local temporary files will be cleaned up, ~~positional and~~ System Services software started at initialization (or by



Platform Configuration and Initialization Data Flow Diagram

Initialization and Termination Services) will be terminated.

1.3.2 OPS CM External Interfaces

1.3.2.1 OPS CM System Message Formats

OPS CM will initially send 2 general system services messages. Both of these messages will report the status of platform initialization.

Example:

Message Number = _____
Message Group = _____

I1 Initialization Attempt Failed
Status Register - not used

Insert #1 = Character String (host name)

I1 Initialization Completed Successfully
Status Register - not used

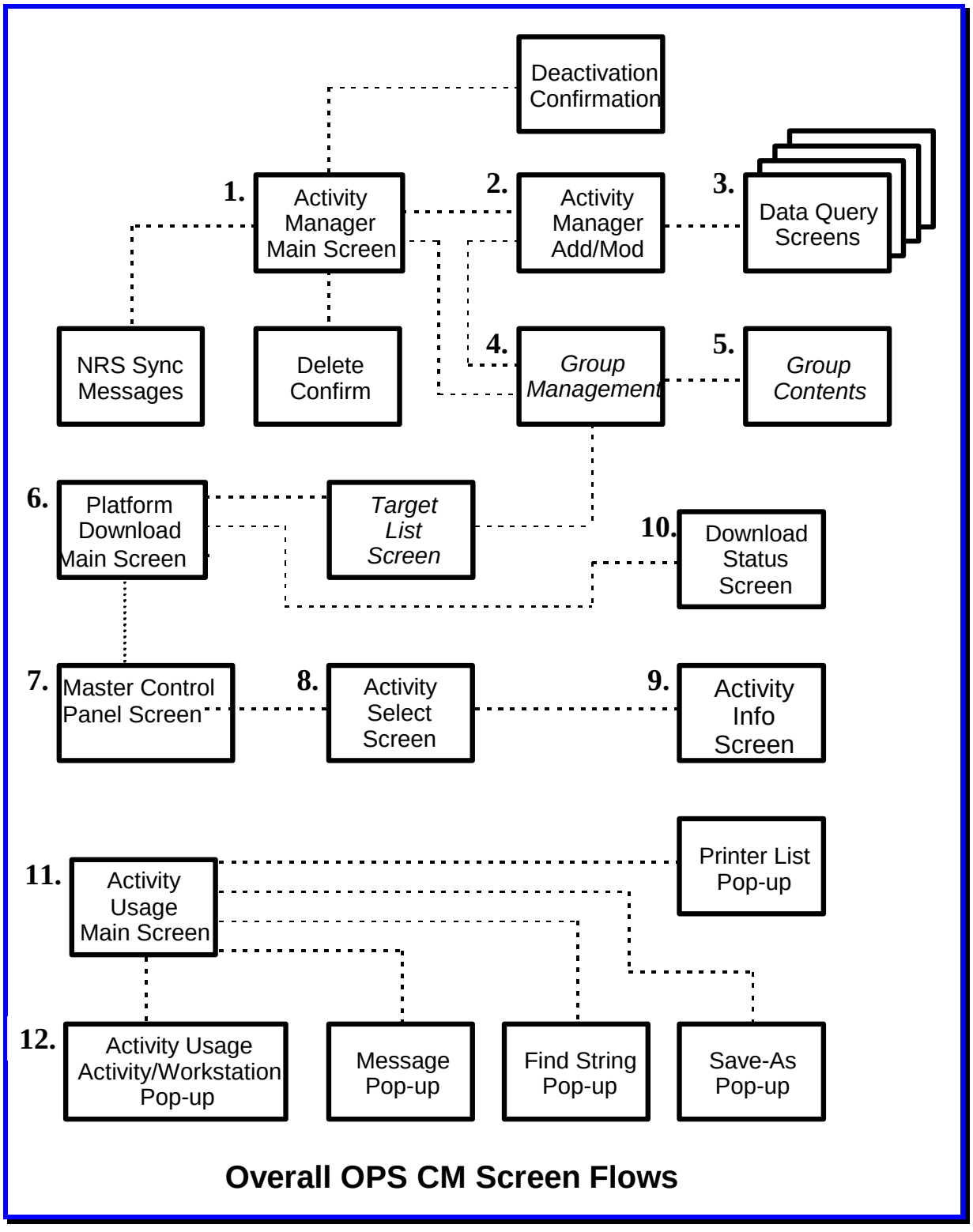
Insert #1 = Character string (host name)

Details Information:

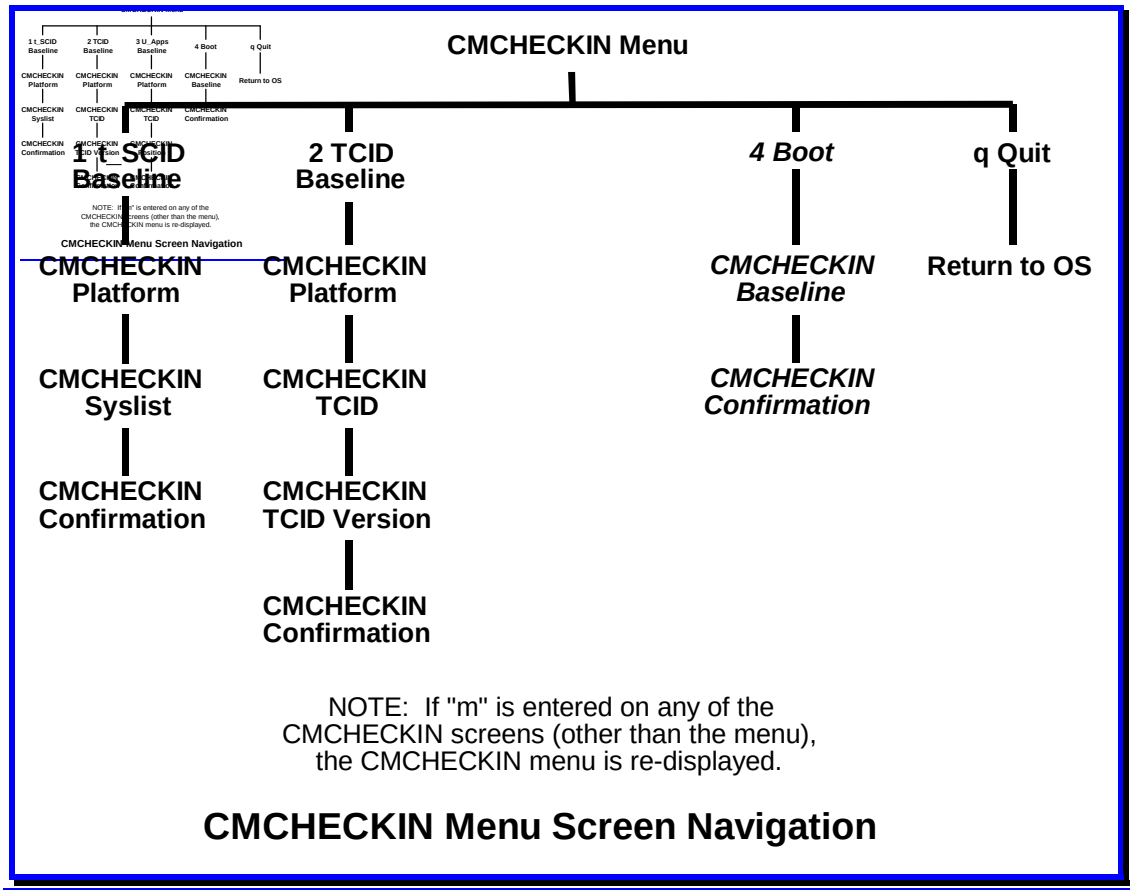
Details Information is not utilized by OPS CM.

1.3.2.2 OPS CM Display Formats

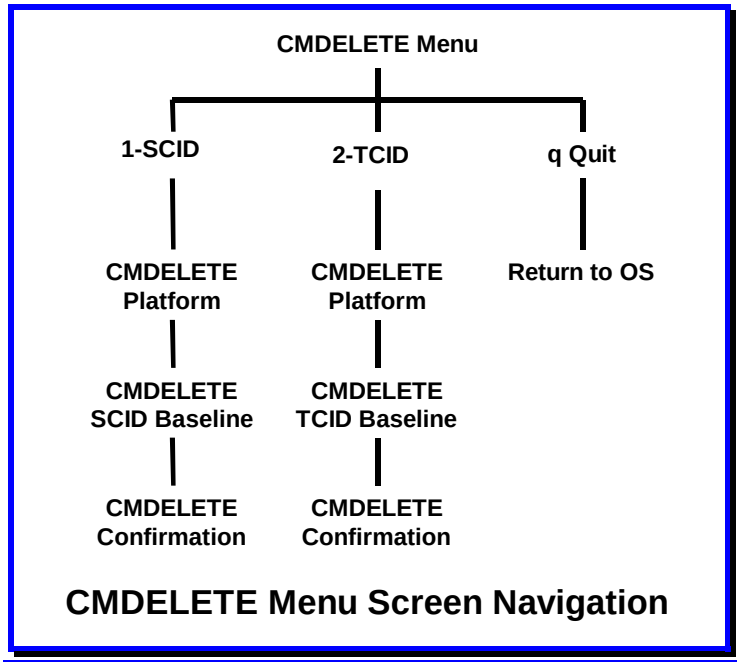
This section documents the design of OPS CM Motif-based displays. OPS CM has no run-time displays. The first diagram is of the overall screen flow showing the relationship between the different screens. This implies navigational path from one screen to the next. Examples of the more significant screens are also shown in this section. Screens with Italicized titles are for future releases


Deactivation Confirmation
1.
Activity Manager Main Screen
2.
Activity Manager Add/Mod
3.
Data Query Screens
NRS Sync Messages
Delete Confirm
4.
Group Management
5.
Group Contents
6.
Platform Download Main Screen
Target List Screen
10.
Download Status Screen
7.
Master Control Panel Screen
8.
Activity Select Screen
9.
Activity Info Screen
Printer List Pop-up
11.
Activity Usage Main Screen
12.
Activity Usage Activity/Workstation Pop-up
Message Pop-up
Find String Pop-up
Save-As Pop-up
Overall OPS CM Screen Flows

The cmcheckin tool resides on the Auspex Server. It is a script - based application that is accessed via remote login from a ~~HCI~~CCWS workstation. Security is provided through the usual UNIX file execute and ownership permissions as well as login accounts on the Auspex~~target~~ server. The cmcheckin ~~above~~ screen tree shows the progression of prompts received at the remote logged users terminal window. The Prompts will follow the levels of the server directory structure for each type of operation. Each prompt will list the contents of the current directory and ask for user input to specify which branch to take next. All screens allow an exit option. The final selection is always followed by a confirmation prompt. Cmcheckin will transfer baselines form the Build Area into the uncertified / test repositories of the OPS CM Server

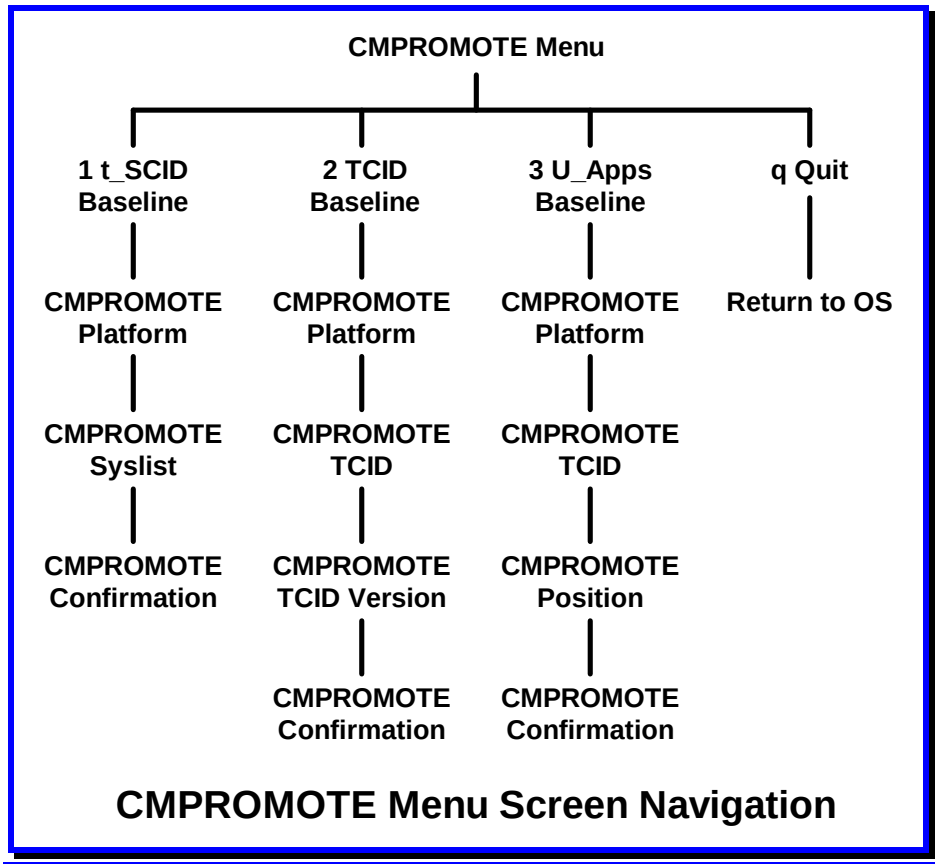


The CMDelete tool resides on the Auspex Server. It is a script - based application that is accessed via remote login from and ~~HCI~~CCWS workstation. Security is provided through the usual UNIX file execute and ownership permissions as well as login accounts on the target server. The cmdelete~~above~~ screen tree shows the progression of prompts received at the remote logged users terminal window. The Prompts will follow the levels of the server directory structure for each type of operation. Once a test baseline has been specified, the script ~~will search the baselines associated syslist for all subsystem versions referenced and~~ will remove it from the repository. ~~Subsystem versions that are referenced in other syslists are not removed.~~ All screens allow an exit option. The final selection is always followed by a confirmation prompt.



CMDELETE Menu Screen Navigation

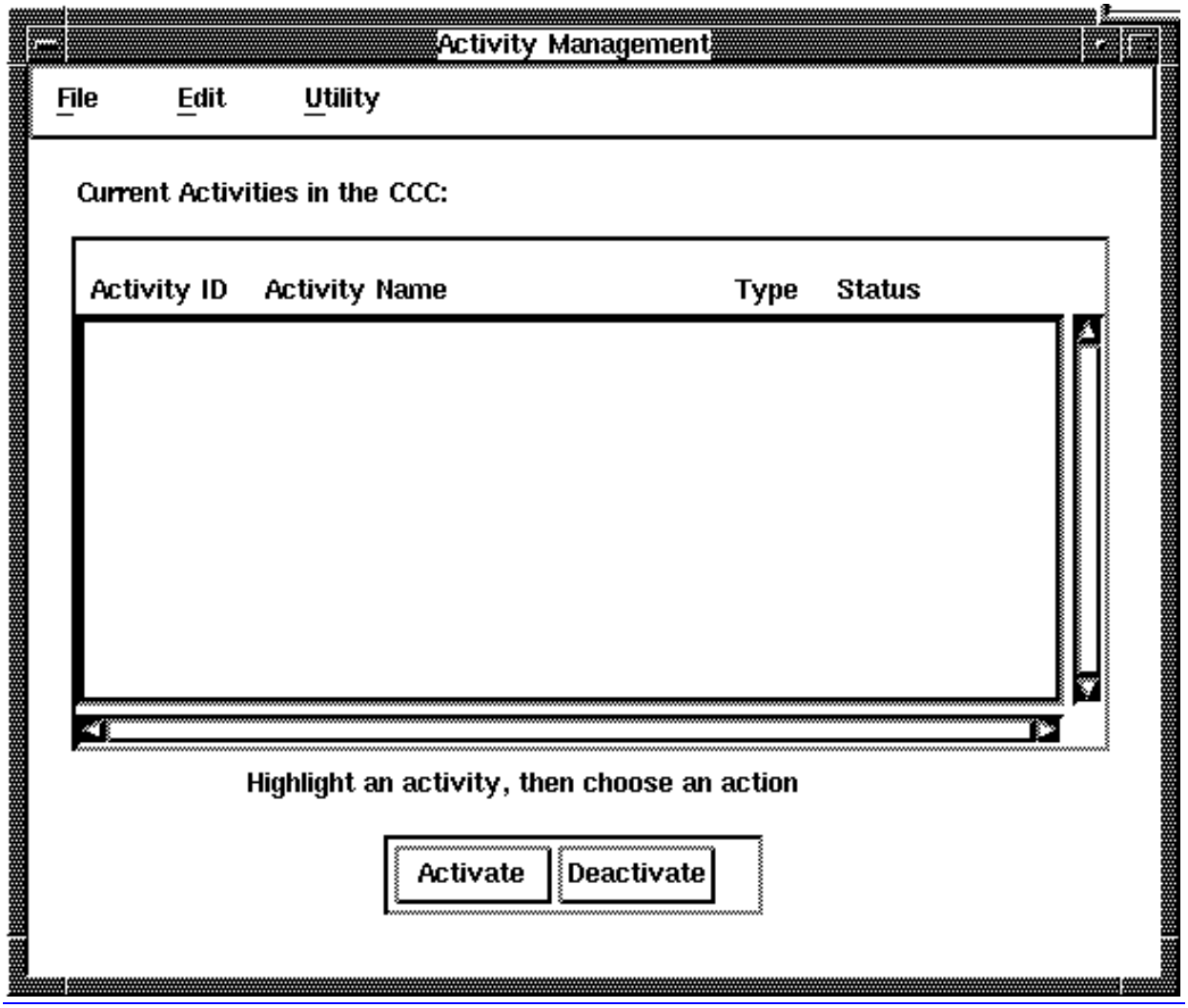
The CMPromote tool resides on the Auspex Server. It is a script - based application that is accessed via remote login from and ~~HCI~~CCWS workstation. Security is provided through the usual UNIX file execute and ownership permissions as well as login accounts on the target server. The above screen tree shows the progression of prompts received at the remote logged users terminal window. The Prompts will follow the levels of the server directory structure for each type of operation. Once a baseline~~'s syslist has~~has been specified, the script will copy ~~the subsystem version specified~~the baseline from the test area into the verified area. The baseline is removed from the test area at the completion of the promotion process. All screens allow an exit option. The final selection is always followed by a confirmation prompt.



CMPROMOTE Menu Screen Navigation

Activity Manager Main Screen

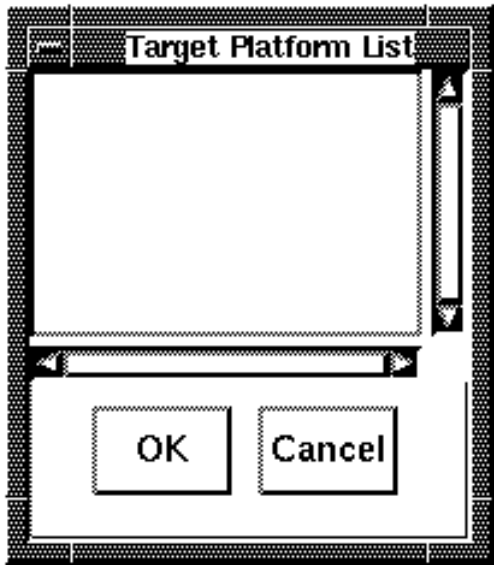
This screen will be used to manage activity definitions used by the Master controllers and test conductors to download and configure the hardware platforms required for a given test. All defined activities are listed with a status of Active or blank. The activate & deactivate buttons will toggle the selected activity from active to inactive. Only active activities will be displayed by the download tools. The menu bar allow options to quit the application, add activities, modify activities, and delete activities. The Utility options invokes a process which synchronizes the active activities in activity manager with NRS.

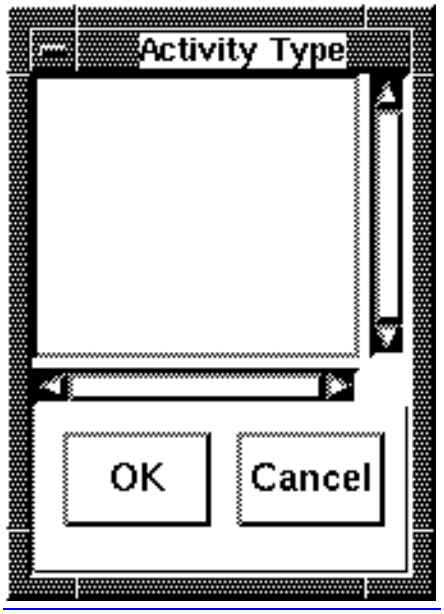


Activity Add/Modify Screen

This screen is used to build the activity definitions. Numerous Data Query screens can be accessed via the arrow buttons to retrieve information from repository directories and/or pre-defined lists of allowable options. Samples of these query screens are shown below in 3: Data Query Screens. Pop-up message screens will warn the user of invalid choices. *The "Edit Groups" button will allow the user to select a group name containing a list of platforms to be configured using the activity definition.* Activities are saved to the /clcs/act_def/activities repository on the local cm server in the domain in which the Master Control Workstation resides.(See appendix B for directory structures) on the CM Server.

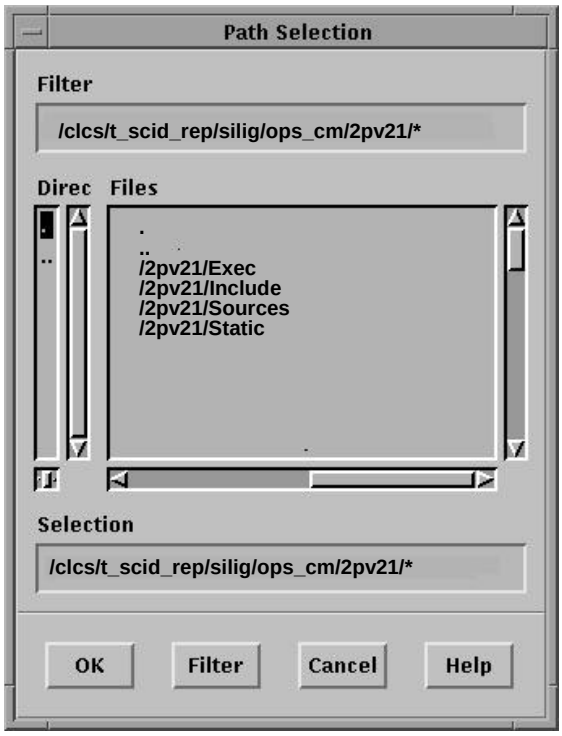
Data Query Screens





Data Query Screens:

This screen is used to traverse the different OPS CM Server repositories for baseline names that will be used by the activity. The arrow buttons by the TCID and SCID fields of the Activity Manager screen will pop-up this screen to allow the user to select an appropriate baseline ID.

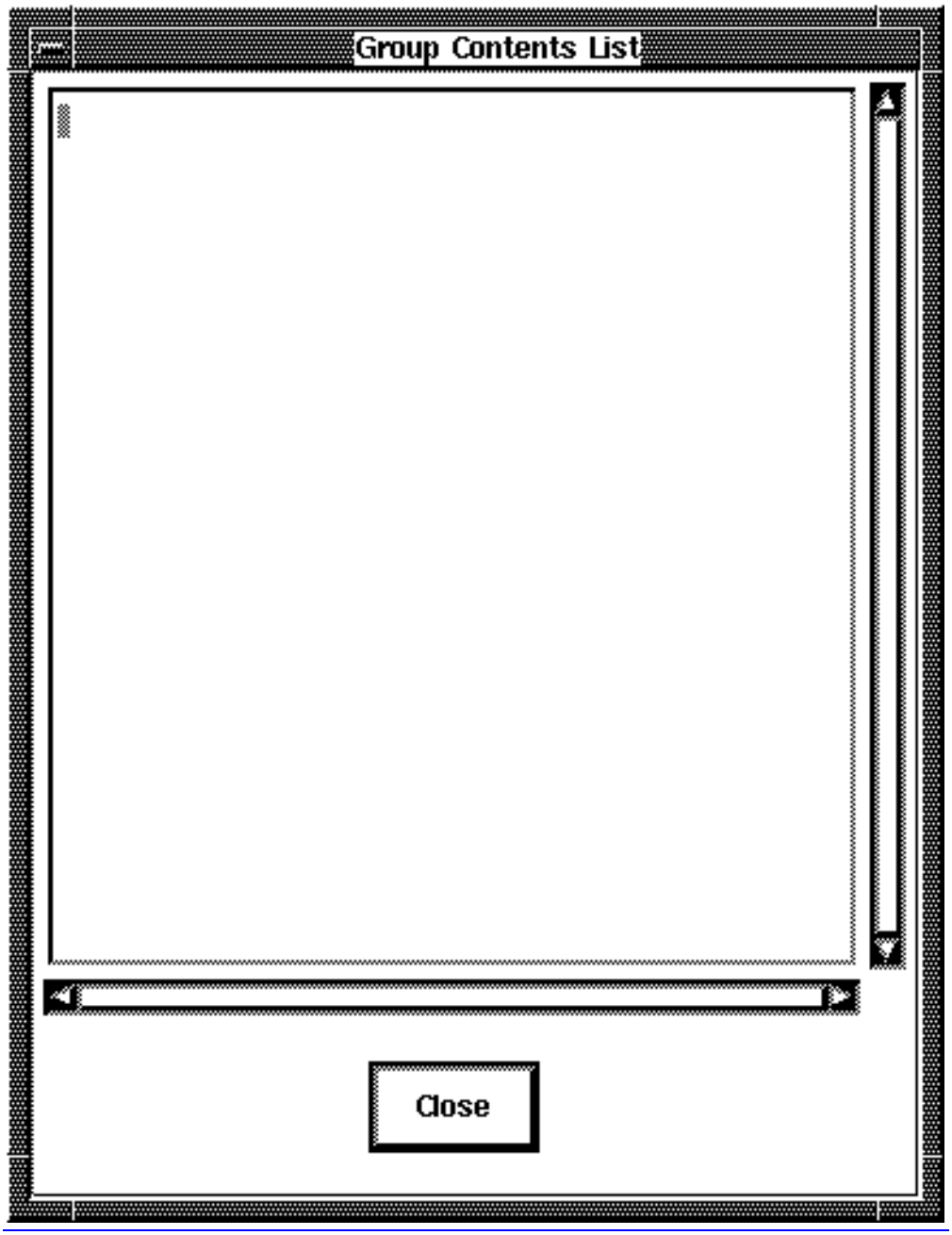


Group Management Screen

This screen is used to select and/or create platform groups that will be used in a test configuration. A list of currently defined groups is displayed in the Group List box. The Expand button pops-up a listing of platform Ids when a group name is selected. Once a group is selected or entered, the Platform List is populated with the Platform Ids & the group list box is cleared. The user will highlight the platform names in the platform list and, using the add / delete buttons, builds the list of platforms to be associated with the group name.

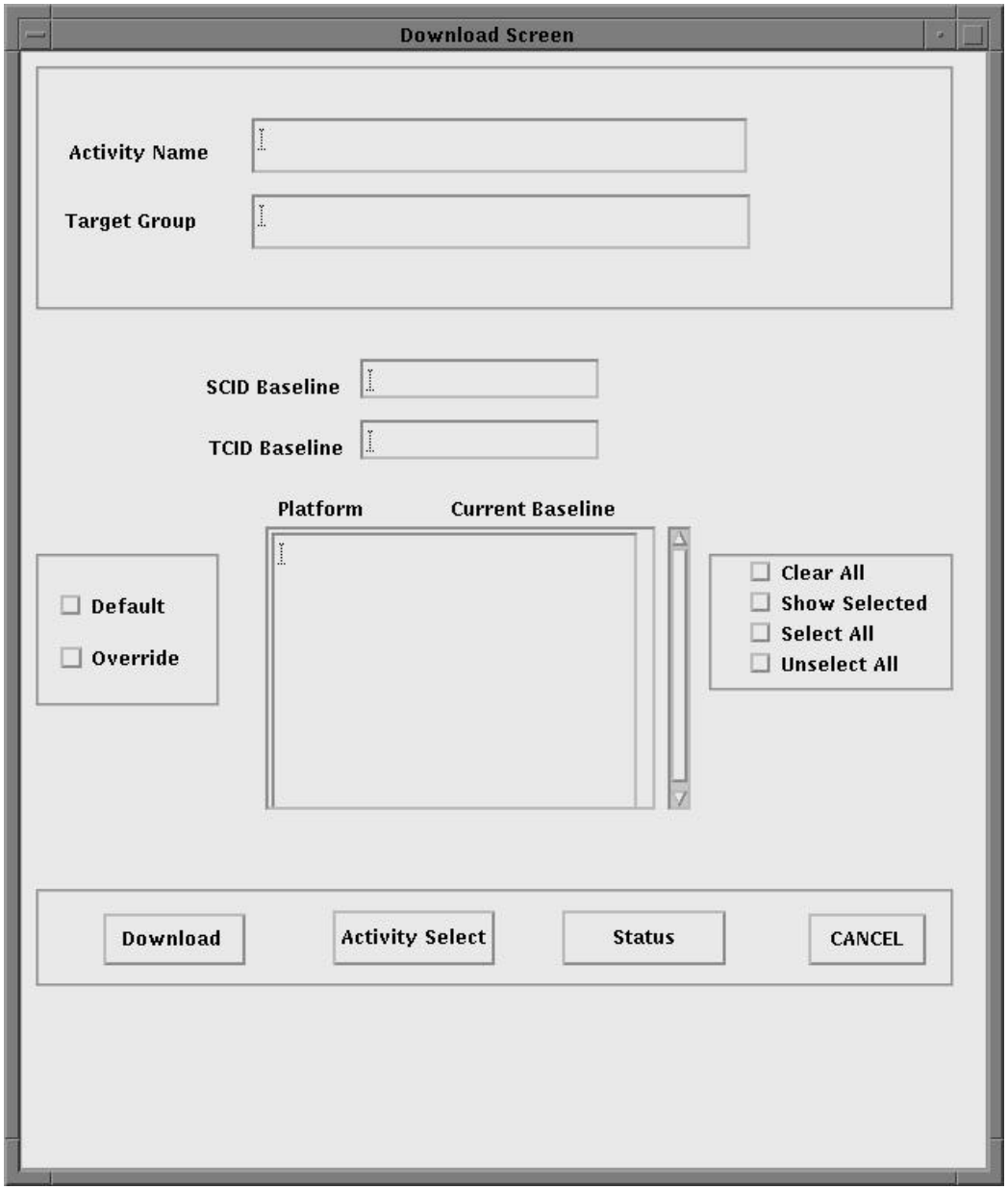
Group Contents List

This screen displays the list of platform ids that are associated with the current group name selected by either the download screen or the activity manager screen.



Download Main Screen

This screen is used to initiate a download to a target group of platforms. The SCID and TCID baselines are ~~displayed as well as the platforms associated with the specified target group.~~ based on the platforms selected from the Master Control Panel GUI. The ~~box~~ window in the middle shows the platforms selected for download, the platforms download status, and the current SCID and TCID baselines on each platform. The user can select a default download (where the download is ignored if the baseline already exists on the target platform) or override (forces the download regardless of the current baseline). The buttons on the right allow the user to manipulate the selections in the platform list. If desired, one to many platform entries can be selected from the list and the download performed on only these platforms. Downloads to the selected platforms are performed concurrently.



Master Control Panel Main Screen

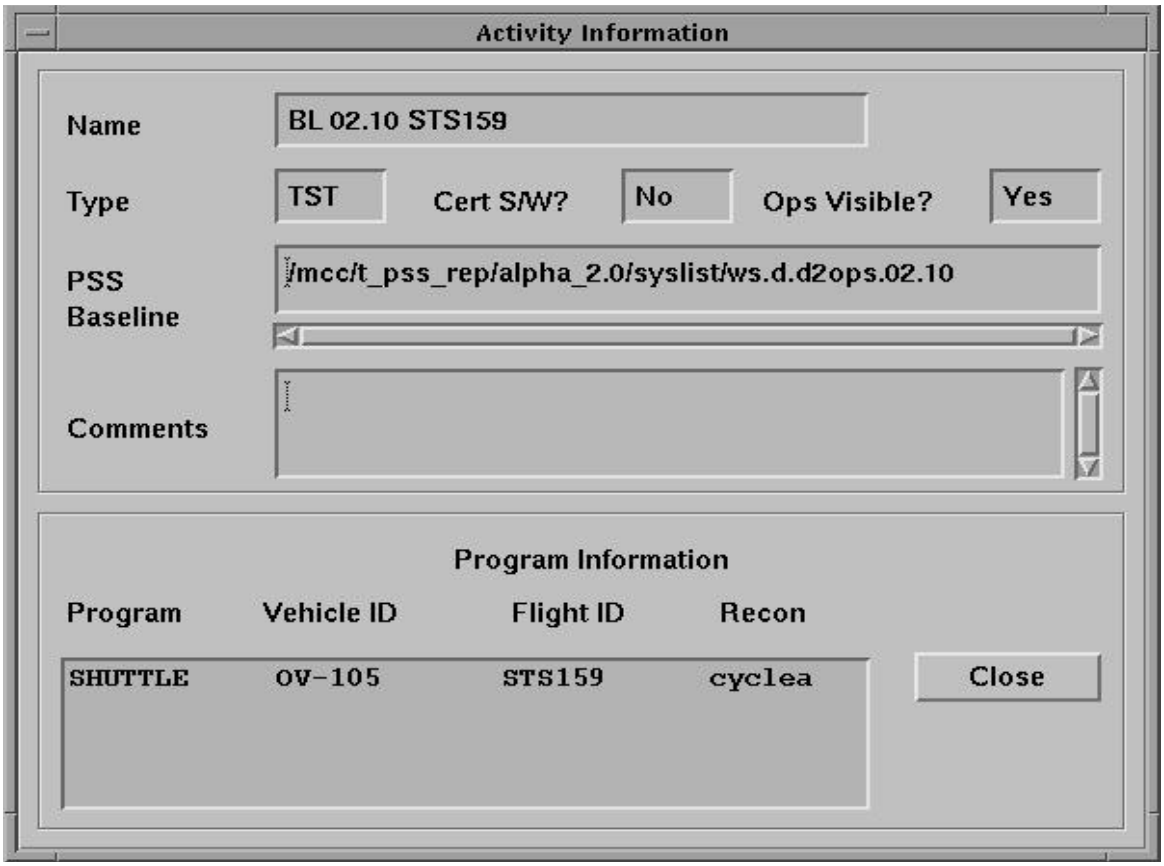
This screen is used to initiate the download and/or initialization ~~configuration~~ of the CCWS, gateways, CCP & DDP Platforms. Since no user will log on to these platforms, it is necessary to allow a user to remotely configure them. The Master Controller~~user~~ will select an activity from the activity select screen and then specify a server type from the menu and a list of servers of that type is displayed. The server type of "All" will display all available subsystems in the same NRS domain as the Master Control Workstation. They will select the actual platforms to be configured from the displayed list. The Activity Select, Download, *and Verify* buttons can be used to prepare and verify the servers for configuration.

Activity Selection Main Screen

This screen is used to specify which activity will be used to define a download. The activity will contain information about the baselines, activity type, & target platform list. The user will select an activity from the list and press the OK button. Only active activities (as defined by the Activity Manager tool) are displayed. The info button will pop up another screen with more detailed information about the activity.

Activity Information Screen

This screen is accessed through the Info button on the Activity Select Screen. It lists the information contained in the selected activity definition. (Note: this screen contains sample data not used by KSC to demonstrate the general look and feel of the screen).

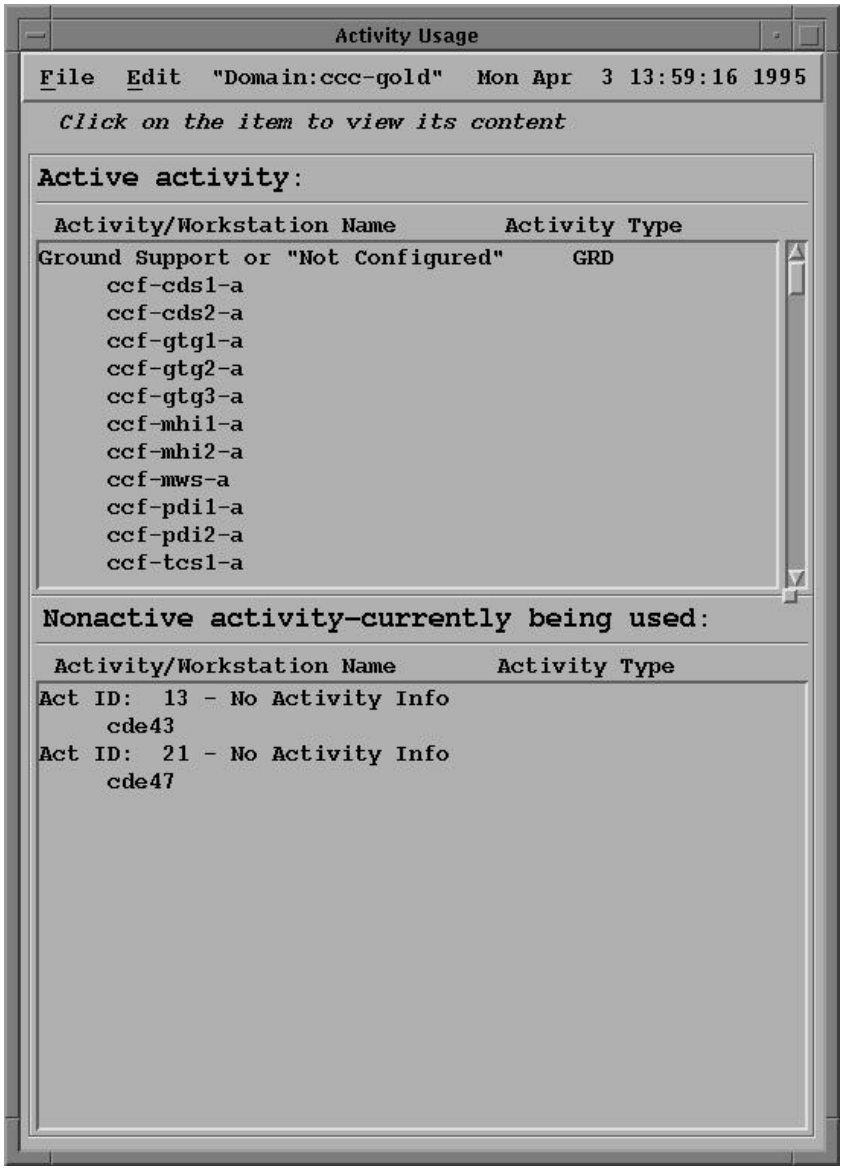


~~**Download Status Screen**~~

~~This screen shows the current status of all platforms currently being downloaded or selected for download.~~

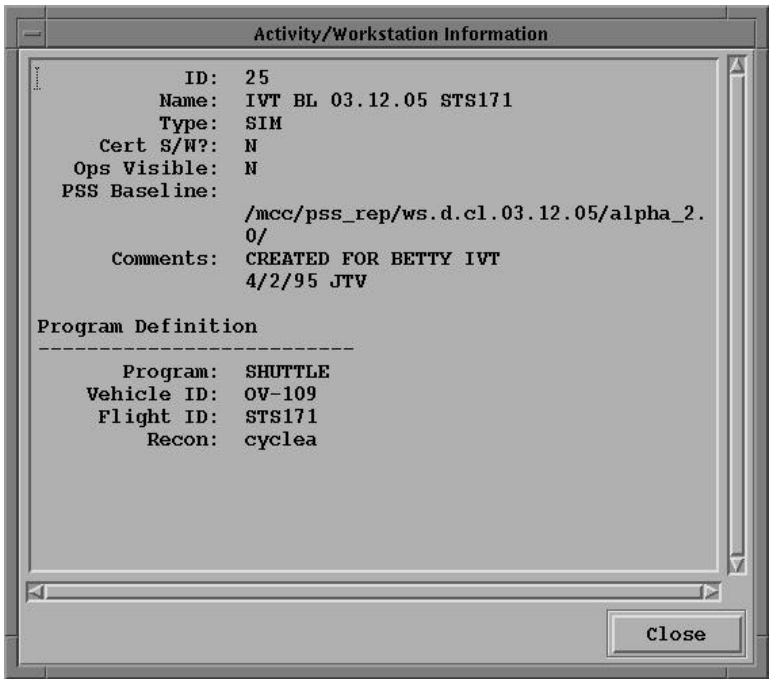
Activity Usage Main Screen

Activity Usage will display the current configuration status of each Platform in the local domain (i.e. sde-1). This display shows data from non-KSC sources to demonstrate the look & feel of the interface. It is updated approximately once per minute based on the data stored by NRS.



Activity Workstation Pop-up Screen

This display shows the details of the configuration of a platform selected from the Activity Usage main screen



1.3.2.3 OPS CM Input Formats

OPS CM GUI's and processes will have the capability to be executed from a terminal window command line, motif mouse button or CDE menu. Certain parameters are accepted for the various executables as noted below:

ocm_actm_actmgr ~~<Activity_file>~~
ocm_actu_main
ocm_ocma_conf <~~Activity_file~~INITIALIZE >
ocm_ocma_deconf
~~ocm_ocma_download <Activity File>~~
ocm_remote_conf
cmcheckin
cmpromote
cmdelete
lmrbaseline

1.3.2.4 OPS CM Printer Formats

OPS CM provides only one Printed report via GUI Menus. This is the Activity Usage report. A sample of this report is shown below. The ocm_npt_show tool will generate a screen output in formatted ASCII text which can be saved to a file and printed. The output of the ocm_npt_show command is also listed below.

Sample Activity Usage Report

==========

User Name :

Position :

Workstation :

Time :

==========ACTIVE

ACTIVITY LISTING:

==========Not Configured

==========

Information:

ID: 0

Name: Not Configured

CCWSVerif S/W?: Y

CCWS SCID: ws.d.rd.02.05.01

TCID: GA094BA

CCP Verif S/W?: Y

CCP SCID: ws.d.rd.02.05.03

DDP Verif S/W?: Y

DDP SCID: ws.d.rd.02.05.03

Comments:

==========

Workstation:

sde1-1

sde1-2

sde1-3

sde2-1

sde2-2

==========

REDSTONE FIRST RELEASE TEST

==========

Information:

ID: 3

Name:	Thor FIRST RELEASE TEST
CCWS Verif S/W?:	N
CCWS SCID:	scid_ops.thor.2.3
TCID:	GA084BA
CCP Verif S/W?:	Y
CCP SCID:	ws.d.rd.02.05.03
DDP Verif S/W?:	Y
DDP SCID:	ws.d.rd.02.05.03

Comments:	09/09/97 CIT
Flight ID:	STS088
Tail ID:	OV-103
EI Location:	VAB-2

==========

Workstation:

sde2-3

sde2-4

sde2-5

sde2-6

==========

Sample PPT Show Output

```
****************** Showing User Data *************************
*       User Name                       : jdoe
*       Position Name                   : eclss
*       Position Home Directory         : /users/eclss
*       Node Name                       : sde1-ccws3
*       RSYS
*       Domain
****************** Showing Activity Info **********************
*       Activity ID                     : 1
*       Activity Name                   : Initial Thor Test Baseline
*       Activity Type                   : DEV
*       Activity CCWS SCID              : /clcs/t_scid_rep/scid_ops.thor.2.2
*       Activity CCP SCID               : /clcs/t_scid_rep/scid_ops.thor.2.3
*       Activity DDP SCID               : /clcs/t_scid_rep/scod_ops.thor.2.3
*       Activity TCID                   : GA094BA
*       CCWS SCID Verification Level    : N
*       CCP SCID Verification Level     : N
*       DDP SCID Verification Level     : N
*       Tail ID                         : OV-104
*       Flight ID                       : STS094
*       End Item Location               : VAB-1
********** Showing Gateway Definitions *************************
```

```
*         Gateway Count                 : 2
========== Gateway Definition           : 1  ==========
*         Gateway Name                  : sde2gse1
*         Gateway Type                  : gse
*         Gateway SCID                  : scid_ops.thor.1.1
*         Gateway TCID                  : GA094BA
========== Gateway Definition           : 2  ==========
*         Gateway Name                  : sde2cgs2
*         Gateway Type                  : cgs
*         Gateway SCID                  : scid_ops.thor.1.1
*         Gateway TCID                  : GA094BA


****************** End of PPT Show **************************
```

1.3.2.5 Interprocess Communications (C-to-C Communications?)

This section describes the data that OPS CM intends to send from the Master Control Workstation GUI to the local OPS CM server and other local subsystems across the DCN~~in the SDE(s) RTCN to the gateways and the responses are received from the gateways~~. Further definition of the interface between the local cm server and the gateways is described in the CLCS Gateway Common Services CSCI to System Control CSCI OPS CM CSC Interface Definition Document (84K00360). The Master Controller ~~User~~ will run a GUI at the Master Control ~~HCI~~CCWS on the DCN, communicating with daemon processes on the local~~SDE~~ OPS CM Server, the C-C communication process will take place between the daemon process and the gateway.

1.3.2.6 CSC External Interface Calls (e.g., API Calling Formats)

1.3.2.6.1 Ocm_npt_read

OPS CM provides an API for retrieving data out of the Platform Parameter Table (PPT). This API will be available through a global shared library.

Description:
ocm_npt_read:
This is an OPS CM API. ocm_npt_read is used to obtain platform parameter information.

Syntax:

#include “ocm.h”

```
int ocm_npt_read        (NPT_TYPE srch_fld,
                         void *rtn_val);
```

Examples:

For srch_fld of NPT_ALL, use the following calling format:

```
npt_struct  npt;
rc =  ocm_npt_read (NPT_ALL, &npt);
```

For srch_fld other than NPT_ALL, or NPT_ACT_ID, use the following calling format:

```
char char_array [500];
rc = ocm_npt_read (srch_fld char_array);
```

For srch_fld of NPT_ACT_ID, use the following calling format:

```
int integer_value;
rc = ocm_npt_read (srch_fld, &integer_value);
```

~~**Description:**~~

~~This is an OPS CM API. ocm_ppt_read is used to obtain platform parameter information.~~

Arguments:

srch_fld:

Enumerated type identifying the field requested by the caller. The enumerated type values are:

NPT_ALL:	All fields are returned
NPT_USER:	Logged in User's ID
NPT_POS:	Logged in user's position
NPT_NODE_NAME:	Current platform's network ID
NPT_RSYS_ID:	Logged in user's RSYS
NPT_PHOME:	Path to the logged in user's positional home directory
NPT_ACTID:	Numeric Activity Number
NPT_ACTN:	Textual description of the Activity
NPT_ACT_TYPE:	Activity type (enumerated)
NPT_SCID_BL_NAME:	SCID Baseline ID
NPT_TCID_BL_NAME:	TCID Baseline ID
NPT_UVL:	Software Verification Level (Y/N)
NPT_TAIL_ID:	Vehicle ID number
NPT_FLIGHT_ID:	Current Flight ID number assigned to the vehicle.
NPT_EI_LOC:	End item location of Vehicle described by TAIL_ID (enumerated)

rtn_val:

Value returned to the caller.

Return values :

Upon successful completion, ocm_npt_read API returns a successful return value to the application if the parameter(s) is/are returned successfully. Otherwise, a return value of -1 is returned and errno is set to indicate the error.

1.3.2.6.2 Ocm_npt_gw_rec_read

OPS CM provides an API for retrieving gateway record data out of the Platform Parameter Table (PPT). This API will be available through a global shared library.

Name:

Ocm_npt_gw_rec_read – obtain platform parameter table information for the gateway records.

Syntax:

```
#include "ocm.h"

int ocm_npt_gw_read    gw_rec_type srch_fld,
                       void *rtn_val);
```

Examples:

```
gw_record rec ;

Rc = ocm_npt_gw_rec_read ( GW_REC_ALL, &rec ) ;
To access th "ith" gateway recor ( 0 < I < rec.gw_rec_cnt ) such as gateway name, type, scid & tcid, do the
following::

        char gw_name [CCC_MAX_PGM_LEN*2 ] ;
```

char gw_type [CCC_MAX_FLT_LEN*2] ;
char gw_scid [CCC_MAX_VEH_LEN*2] ;
char gw_tcid [CCC_MAX_RCN_LEN*2] ;

sprintf (gw_name, rec.gw_rec[i].gw_name) :
sprintf (gw_type, rec.gw_rec[i].gw_type) :
sprintf (gw_scid, rec.gw_rec[i].gw_scid) :
sprintf (gw_tcid, rec.gw_rec[i].gw_tcid) :

]Description:

ocm_npt_gw_read:

This is an OPS CM API. ocm_npt_gw_read is used to obtain gateay information from the platform parameter. The API returns gw_rec_cnt records of gateway records. The fields in these records are gw_name, gw_type, gw_scid, and gw_tcid

Arguments:

srch_fld:
Enumerated type identifying the field requested by the caller. The enumerated type values are:

GW_REC_ALL: All fields are returned

rtn_val:
Value returned to the caller.

Return values :

Upon successful completion, ocm_npt_gw_read API returns a successful return value to the application if the parameter(s) is/are returned successfully. Otherwise, a return value of -1 is returned and errno is set to indicate the error. Refer to sct_cmtools/Include/ocm.h for the structure of the gateway records returned to the caller. It is th ecaller's responsibility to allocate memory for storage of the returned data.

1.3.2.7 OPS CM Table Formats

This data documents the design of the tables used internal to OPS CM.

OPS CM Activity File Data Attributes:

Attribute Name	Attribute Description	Attribute Type	Attribute Length	Legal Values
Activity_Name	Name of the Activity	chr	30	Free form text
Activity_Type	Test type of the Activity	Enumerated	3	MIS | SIM | DEV
Description	Text Comment	chr	255	Free form text
CCWS Verif_Level	Use Verified or Unverified SCID / TCID	Enumerated	1	Y | N
CCWS SCID	SCID Baseline Name	chr	255	UNIX Path name
CCWS TCID	TCID Baseline Name	chr	255	UNIX Path Name
CCP Verif_Level	Use Verified or	Enumerated	1	Y | N

	Unverified SCID / TCID			
CCP SCID	SCID Baseline Name	chr	255	UNIX Path name
CCP TCID	TCID Baseline Name	chr	255	UNIX Path Name
DDP Verif_Level	Use Verified or Unverified SCID / TCID	Enumerated	1	Y | N
DDP SCID	SCID Baseline Name	chr	255	UNIX Path name
DDPTCID	TCID Baseline Name	chr	255	UNIX Path Name
Tail_ID	Vehicle Name	chr	8	Character
Flight_ID	Flight Number	chr	10	Character
End_Item_Loc	Vehicle Location	Enumerated	8	VAB1, OPF1, PADA, ORBIT
GW_Rec_Cnt	# of Gateways	int		
GW_Name	Gateway Name	chr	???	text name for gateway
GW_Type	Gateway Type	chr	???	gsc, cgs, …
GW_SCID	SCID used by the gateway	chr	???	text name of SCID baseline
GW_TCID	TCID used by the gateway	chr	???	text name of TCID baseline

OPS CM Platform Parameter Table Data Attributes:

Attribute Name	Attribute Description	Attribute Type	Attribute Length	Legal Values
~~User_Name~~	ID of l~~ogged~~default ~~-~~user	chr	10	UNIX User ID
Position_Name	Pos of default~~logged~~ user	chr	10	UNIX Group ID
Pos_Home_Directory	Defalt~~Users Po~~s Home directory location	chr	255	UNIX Directory
Node_Name	Network ID of this platform	chr	32	Network Node ID
~~RSYS~~	~~Rsys of logged user~~	~~chr~~	~~4~~	~~RSYS Name~~
~~Domain~~	~~Assigned room for activity~~	~~chr~~	~~10~~	
Act_ID	Numeric Activity ID	int		Activity<#>
Act_name	Text Activity name	chr	30	Free form text
Act_Type	Test type of Activity	chr	3	SIM; DEV; MIS
Act_SCID_Baseline	SCID for this Activity	chr	255	UNIX Directory
Act_TCID_Baseline	TCID for this Activity	chr	255	UNIX Directory
User_Verif_Lvl	Verified S/W?	chr	1	Y / N
Flight_ID	Flight Number	chr	10	STS<###>
Tail_ID	Vehicle Number	chr	8	OV-<###>
End_Item_Loc	Vehicle Location	chr	10	OPF1,2,3; PAD-A,B; HB1,3; …~~TBD~~
GW_Rec_Cnt	# of Gateways	int		
GW_Name	Gateway Name	chr	???	text name for gateway

GW_Type	Gateway Type	chr	???	gsc, cgs, …
GW_SCID	SCID used by the gateway	chr	???	text name of SCID baseline
GW_TCID	TCID used by the gateway	chr	???	text name of TCID baseline

1.3.3 OPS CM Test Plan

Test procedures developed for the Redstone release will serve as the basis for most of the Thor OPSCM testing. Additional or different steps will be performed as necessary to adequately test the new Thor capabilities. Additional testing will be coordinated with the CIT coordinator(s)~~OS~~ and other system services groups to verify that the subsystem startup and initialization processes complete successfully.

The following test cases will be used during the CIT:

Gateway Download and Initialization

~~HCI Platform Download and initialization~~

~~HCI~~CCWS Platform start-up~~login~~ and initialization

~~HCI Platform shift change~~

CCWS / CCP / DDP Server download and remote configuration

Activity Definition (Add / modify / delete / activate / deactivate)

Repository management testing

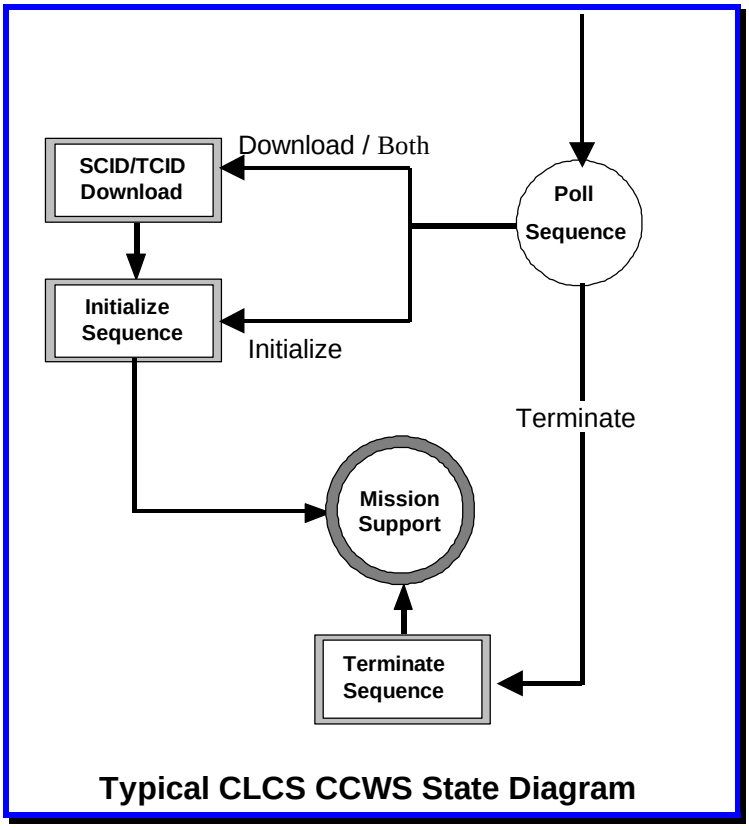
Platform Parameter Table API's

APPENDIX A - Notes

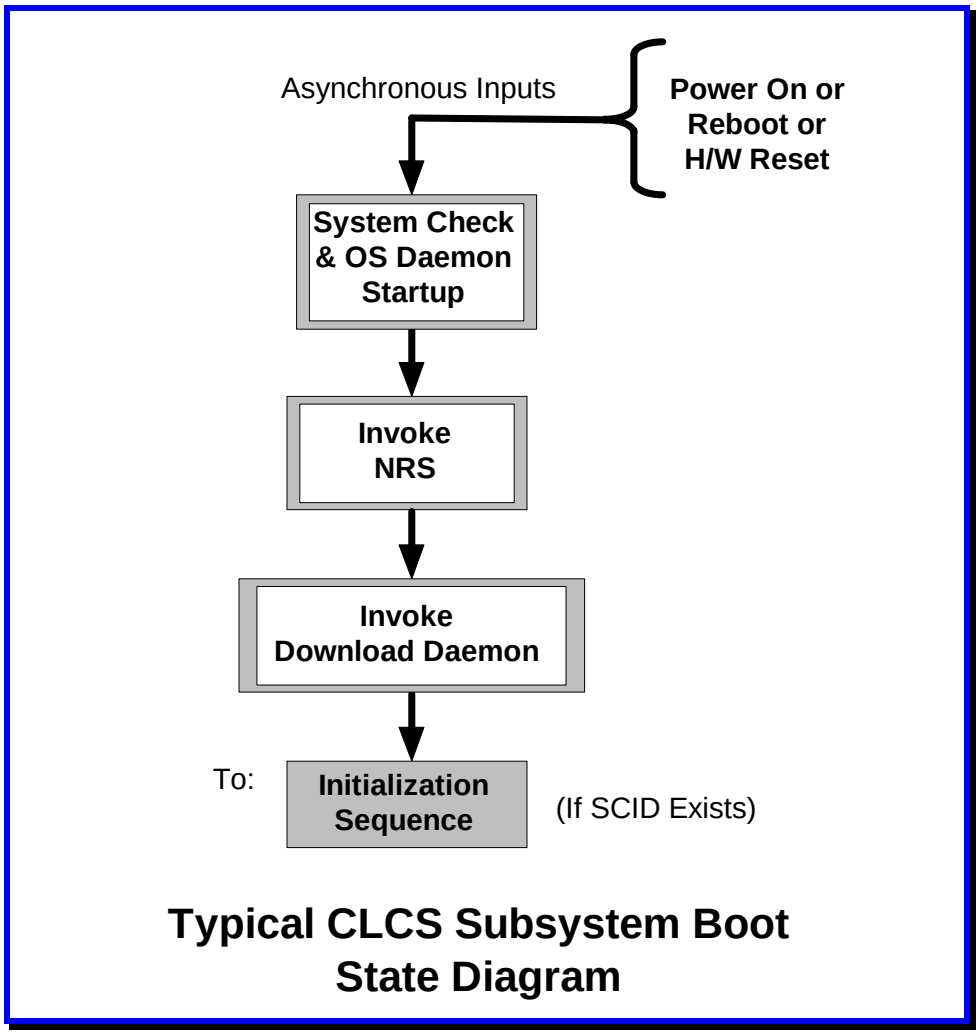
This appendix contains notes which may give information important to a developer.

A-1. CLCS SUBSYSTEM STATES

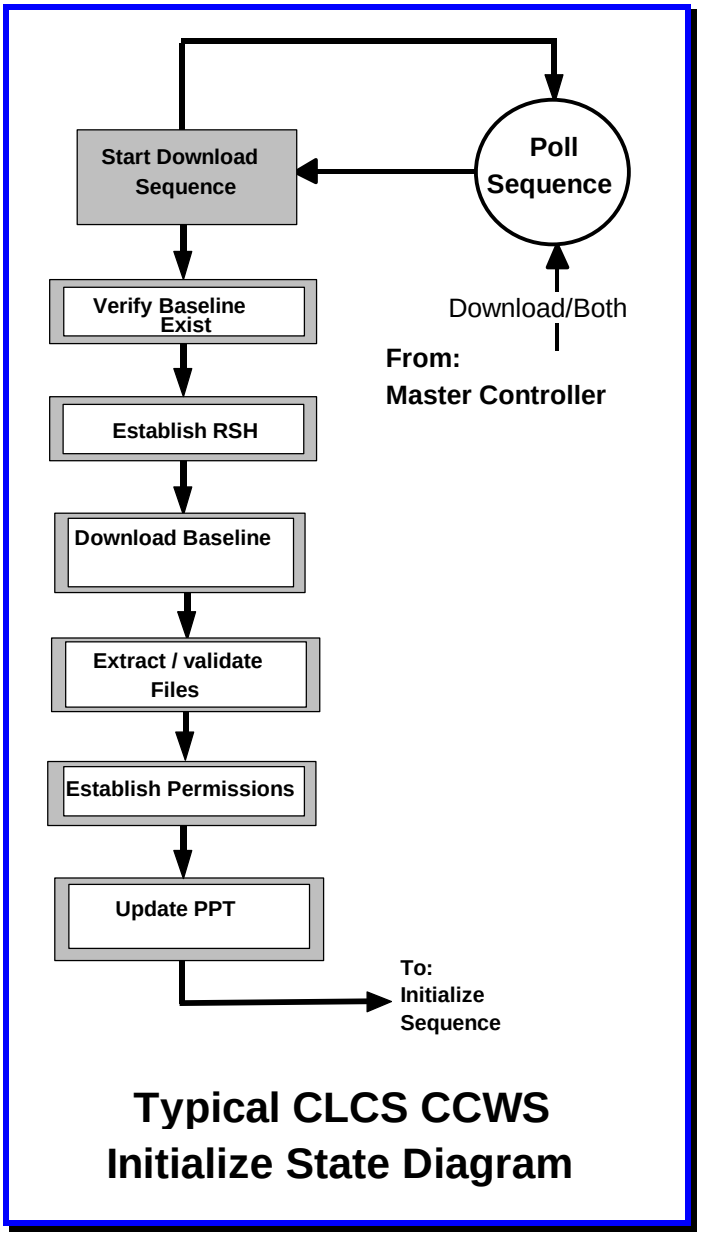
Figure A-1 shows the overall CLCS ~~HCI~~CCWS State Diagram. Figures A-2 through A-8 display the individual states in greater detail.



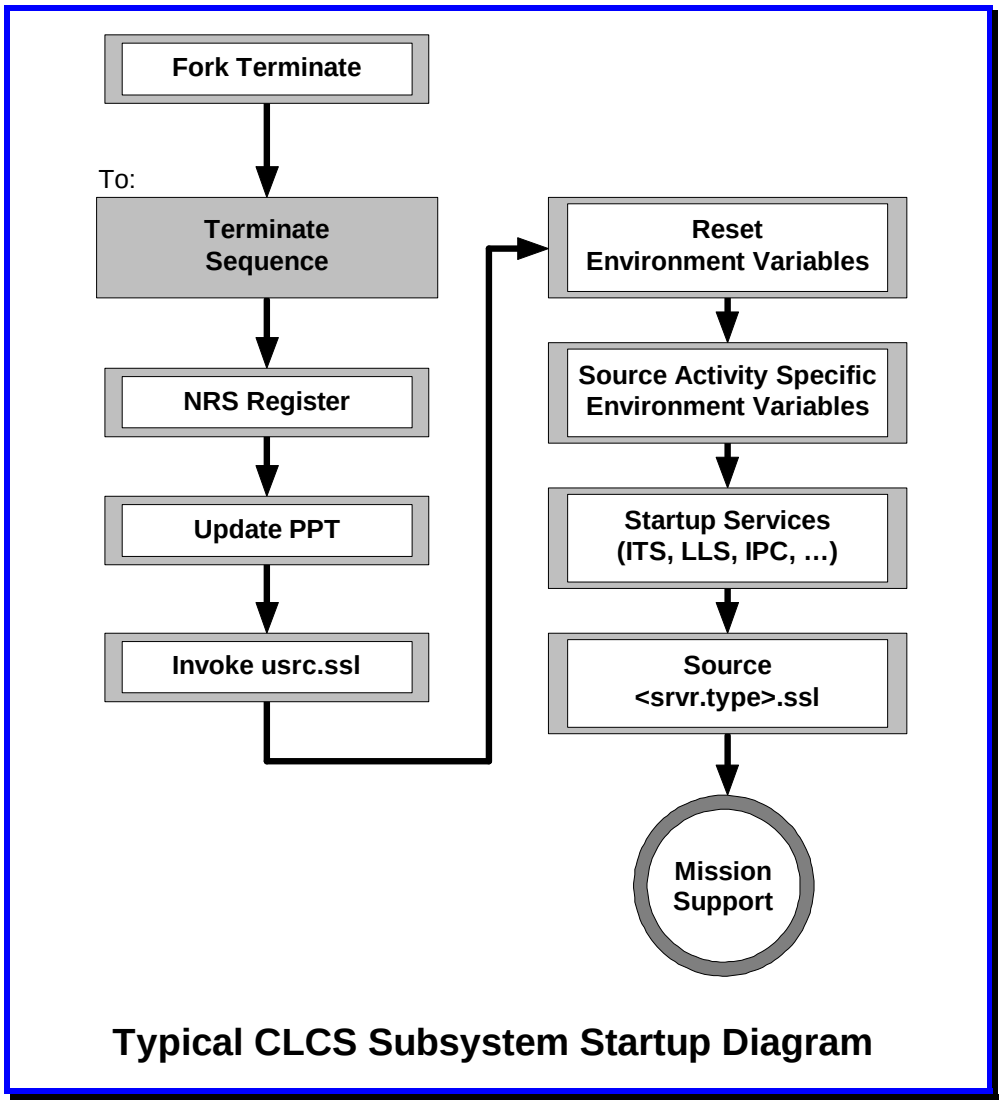
Typical CLCS CCWS State Diagram



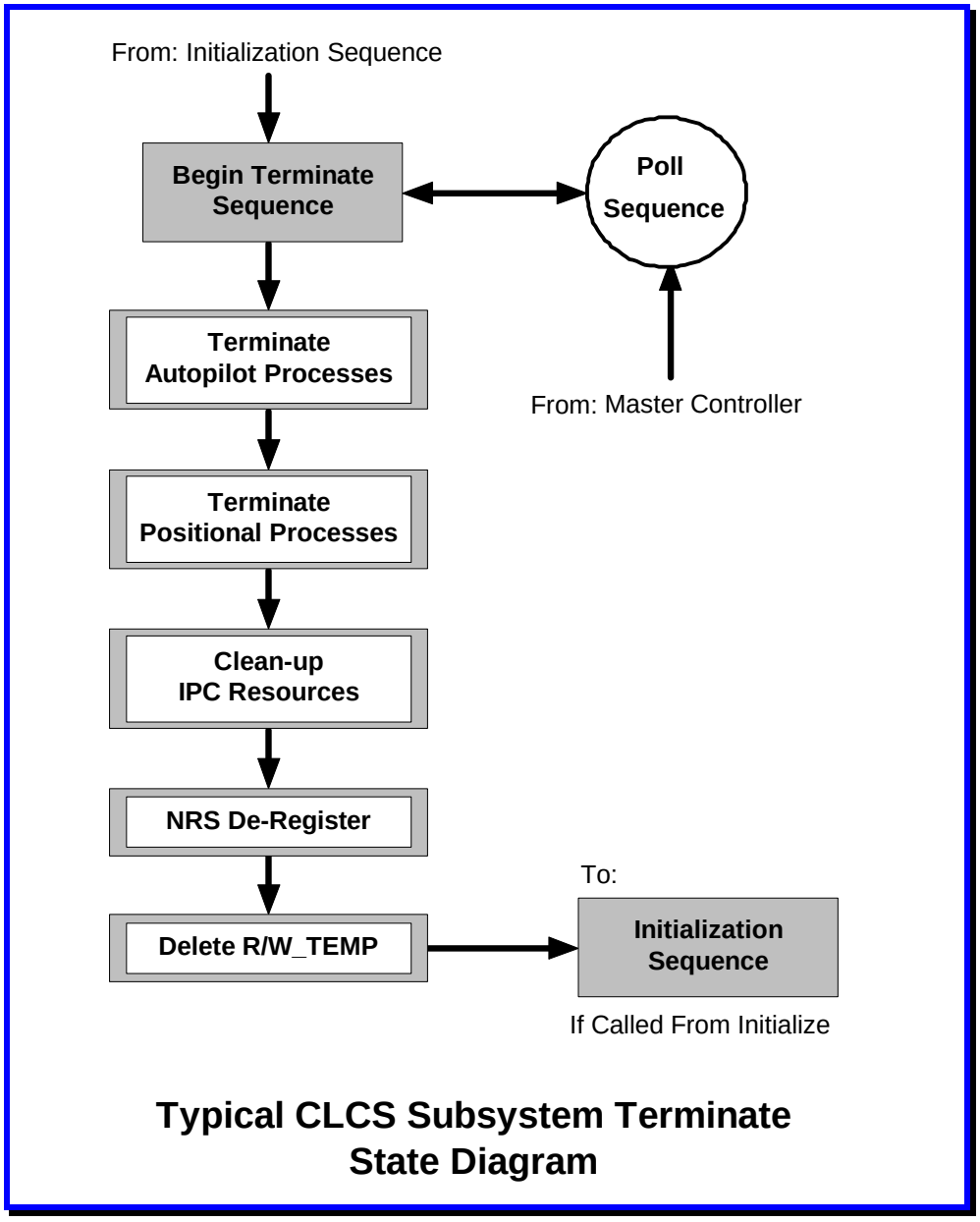
Typical CLCS Subsystem Boot State Diagram



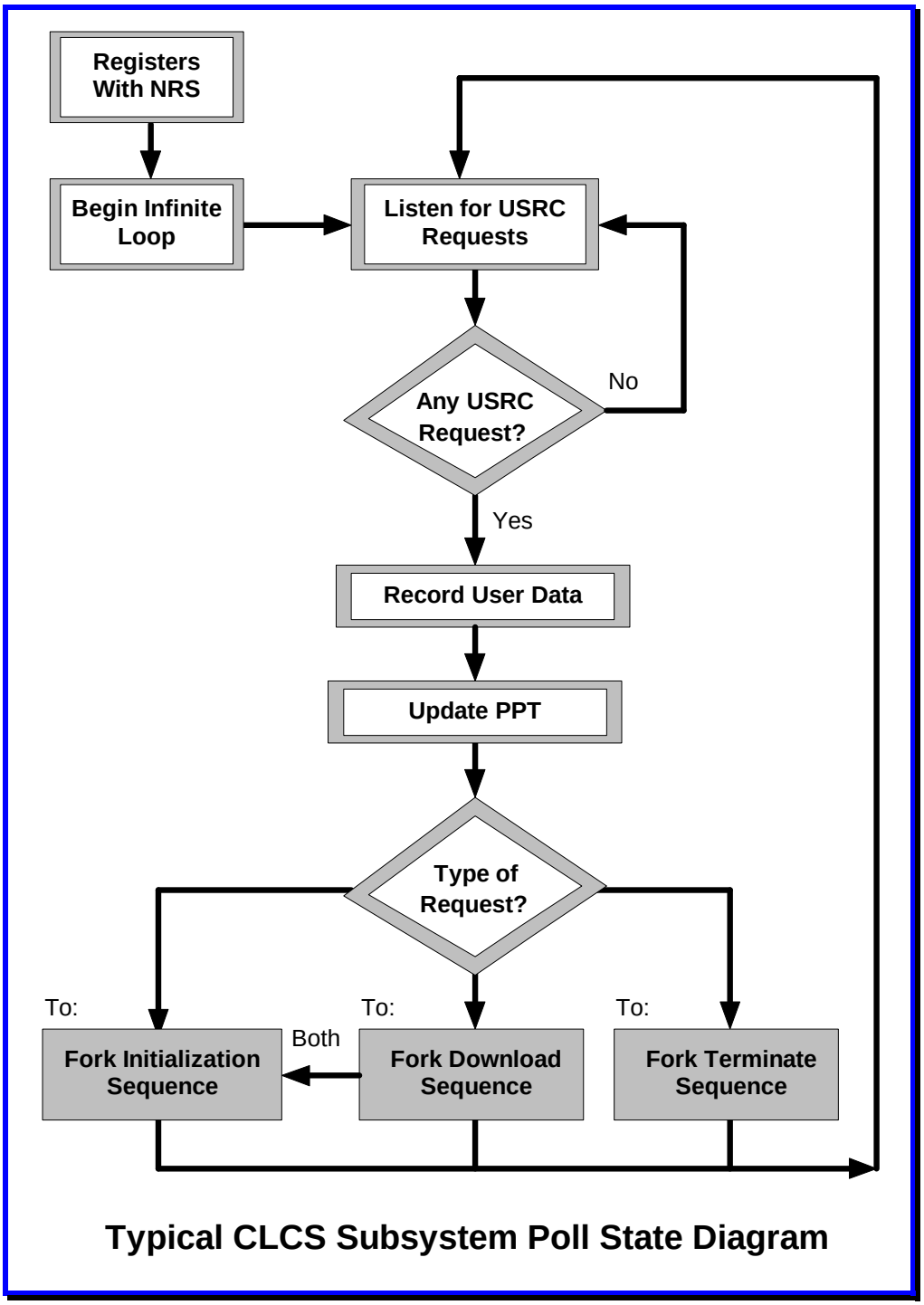
Typical CLCS CCWS Initialize State Diagram



Typical CLCS Subsystem Startup Diagram



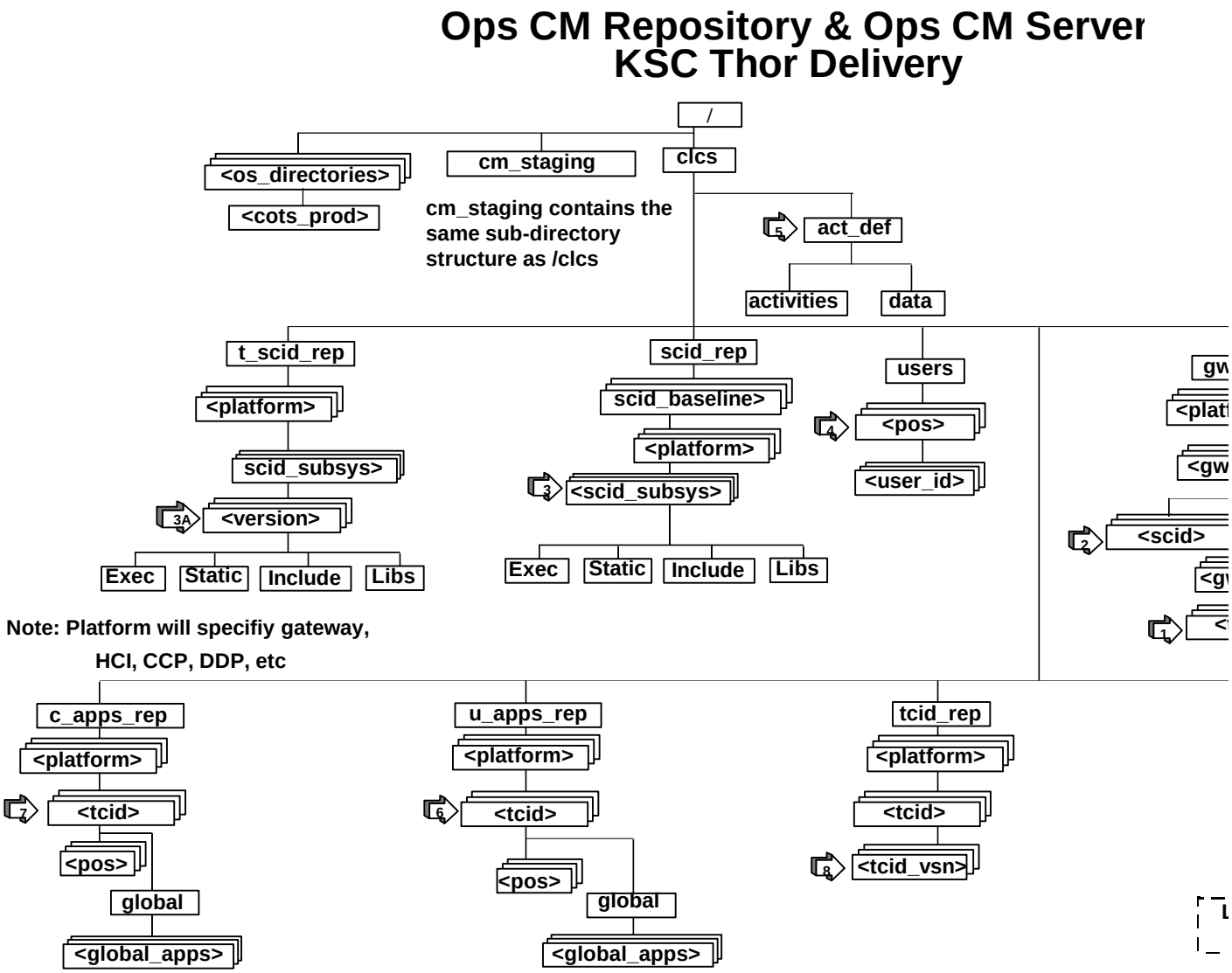
Typical CLCS Subsystem Terminate State Diagram

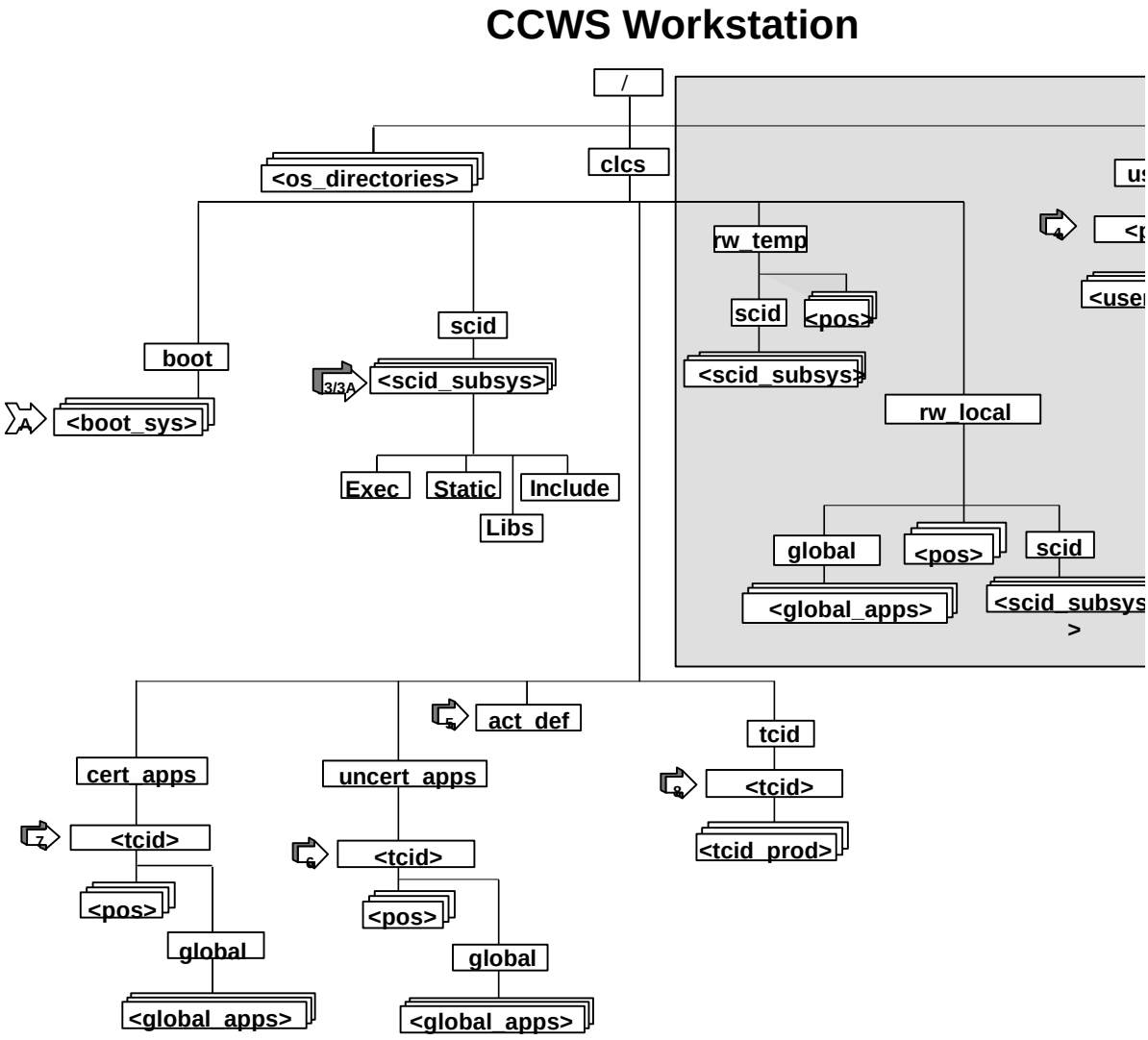


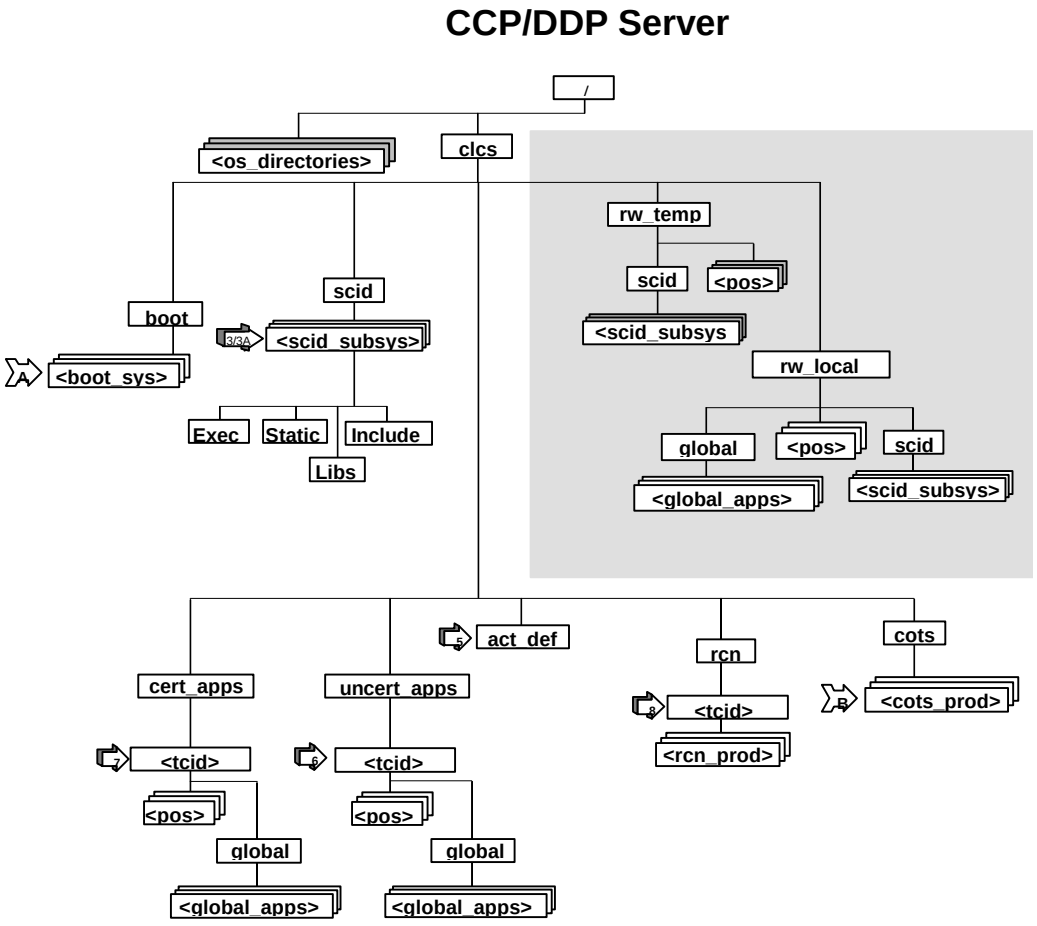
Typical CLCS Subsystem Poll State Diagram

APPENDIX B - Directory Structures

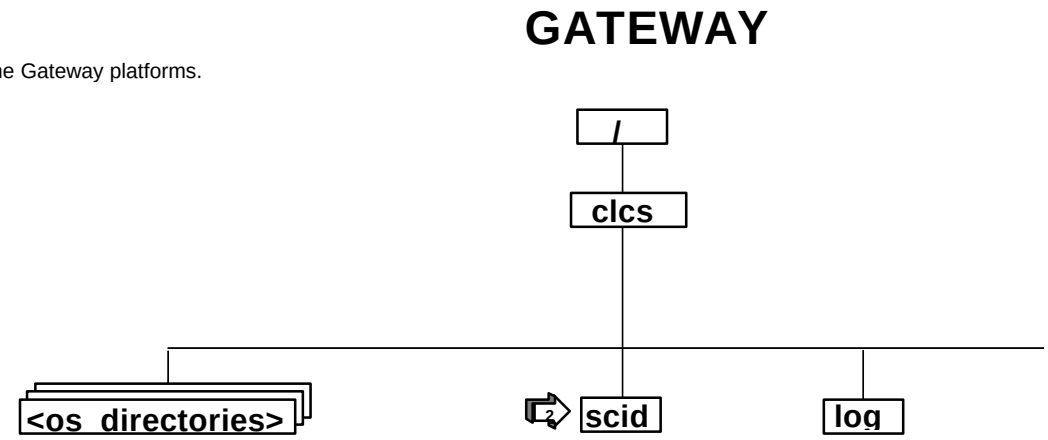
This section contains the directory structures on all platforms in the KSC CLCS environment. These include the Auspex and OPS CM Servers, ~~HCI~~CCWS's, Gateways, and CCP / DDP Servers.


Ops CM Repository & Ops CM Server
KSC Thor Delivery
/
<os_directories>
<cots_prod>
cm_staging
clcs
cm_staging contains the same sub-directory structure as /clcs
5
act_def
activities
data
t_scid_rep
<platform>
scid_subsys>
3A
<version>
Exec
Static
Include
Libs
scid_rep
scid_baseline>
<platform>
3
<scid_subsys>
Exec
Static
Include
Libs
users
4
<pos>
<user_id>
gw
<plat
<gw
2
<scid>
<g
1
Note: Platform will specifiy gateway, HCI, CCP, DDP, etc
c_apps_rep
<platform>
7
<tcid>
<pos>
global
<global_apps>
u_apps_rep
<platform>
6
<tcid>
<pos>
global
<global_apps>
tcid_rep
<platform>
<tcid>
8
<tcid_vsn>


CCWS Workstation
/
clcs
<os_directories>
boot
<boot_sys>
scid
<scid_subsys>
Exec
Static
Include
Libs
rw_temp
scid
<pos>
<scid_subsys>
rw_local
global
<pos>
scid
<global_apps>
act_def
cert_apps
<tcid>
<pos>
global
<global_apps>
uncert_apps
<tcid>
<pos>
global
<global_apps>
tcid
<tcid>
<tcid_prod>


CCP/DDP Server
/
clcs
<os_directories>
rw_temp
scid
<pos>
<scid_subsys>
rw_local
boot
scid
3/3A
<scid_subsys>
A
<boot_sys>
Exec
Static
Include
Libs
global
<pos>
scid
<global_apps>
<scid_subsys>
act_def
cots
rcn
cert_apps
uncert_apps
<tcid>
<cots_prod>
B
<tcid>
<tcid>
<rcn_prod>
<pos>
<pos>
global
global
<global_apps>
<global_apps>

Note - All directories are resident on the Gateway platforms.



Software Requirements and Design Specification Template

1.3.4